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ETIOLOGY OF MENTAL DISEASE.

"F. O. S." asks what is the best and latest work on insanity as showing that insanity and other abnormal mental conditions are due to structural alterations in the brain caused by disease or injury or other defect?

*** That insanity and other abnormal mental conditions are due to *structural* alterations in the brain is a thesis now seldom advanced in psychiatric textbooks. The proposition, as it stands, is, in our present state of knowledge, unproven. Most observers, however, firmly believe that in all such conditions there is some functional disorder of the brain, presumably of a biochemical nature; and that there may, of course, be simultaneous functional derangements of the endocrine organs and the vegetative nervous system, which are possibly causative. There is no gainsaying the unsatisfactory nature or the theory of the psychogenesis of certain mental disorder, of which Bleuler is perhaps the leading exponent; for where there is a psychogenesis there must indubitably be physiological reasons why the brain should be vulnerable. The late Sir Frederick Mott was perhaps the leading exponent of a purely materialistic interpretation. His views are to be found in his many lectures and addresses, most of them published in our columns during the last few years. Dr. J. S. Bolton, in *The Brain in Health and Disease*, and in many recent writings, is a vigorous advocate of similar views. Almost all recent textbooks (for instance, that of Craig and Beaton, reviewed in our issue of June 26th, 1926, p. 1088) consider all theories, and the necessary arguments may be abstracted therefrom. Tanzi's *Textbook of Mental Diseases*, which was translated into English in 1909, would still answer our correspondent's purposes very well. So far as we can ascertain, there has been no more recent edition of the English translation.

INCOME TAX.

"MEDICUS IN A BRITISH COLONY" proposes to spend rather more than a year in England and on the Continent in doing some post-graduate work. He inquires whether he will be liable to income tax in the United Kingdom in respect of income derived from colonial investments.

*** No—provided that he does not spend six months in this country in any one financial year. (N.B.—The financial year commences on April 5th.)

"J. D. B." inquires why relief in respect of wear and tear and upkeep of a motor car is allowed to a private practitioner and not to an army medical officer who uses a car in his professional work.

*** The former's earnings fall under Schedule D and the latter's under Schedule E, and, as different rules apply to the two schedules, seeming anomalies occur sometimes. If "J. D. B." uses his car "wholly, exclusively, and necessarily in the performance of the duties of his office," he should be allowed to deduct the running cost. Judicial decisions have excluded the expense of travelling between the residence and the place of work from the allowance.

"T. C. L." replaced his car in 1925, the replacement cost being £290; the inspector of taxes proposes to allow this sum as a professional expense of the year 1925, but assumes that that will affect the 1926–27 assessment only.

*** Presumably the inspector is assuming that the three years' average will cease to operate for 1927–28; that is the existing intention, but it is perhaps not certain that the change will then be made, and in any event the accompanying provisions for relieving hard cases might assist "T. C. L." As regards the depreciation (20 per cent.) allowance on the new car, we are of opinion that an allowance of £87 should be given as for 1926–27; the ground for withholding it is no doubt that depreciation and replacement allowances cannot be given simultaneously, which is correct, but may be met by pointing out that the claim to deduct the £290 may be regarded as made under the statutory provision for an "obsolescence" allowance.

LETTERS, NOTES, ETC.

POST-GRADUATE HOSTEL.

MR. A. P. BERTWISTLE, F.R.C.S.Ed. (honorary secretary of the Hostel), writes: The Post-Graduate Hostel, Imperial Hotel, Russell Square, W.C.1, is arranging for a series of discussions on anatomical and physiological topics, in order that a graduate may have the opportunity of hearing the views of teachers from schools other than his own. Their purpose will be to show the practical value of these subjects, and they should therefore interest the body of the profession, besides making the subject more interesting to the graduate studying them. The first of these will be on Tuesday next, September 21st, when Professor F. R. S. Frazer (St. Mary's) will open the discussion on "Some clinical bearings of embryology."

CANCER IN FAMILIES.

DR. ALFRED PACKMAN (Rochester) writes: Probably many other practitioners come across cases of cancer affecting members of the same family, but the following cases in two families particularly are worthy of note:

Family 1.	
Edward B., 76	Cancer of stomach.
Emma, 74	Ditto.
Emma, 45 (her daughter)	Cancer of breast.
Charles, 56	Cancer of liver.
James, 52	Cancer of bowel.
Family 2.	
Mrs. B., 76	Cancer of breast.
Mrs. P., 73	Cancer of bowel.
Mr. P., 74	Cancer of right cheek, mouth, and throat.
Mrs. W., 72	Cancer of breast.
Mr. P., 55	Cancer of right eye.

In addition, I have records of mother and two daughters—all cancer of stomach; two sisters—cancer of uterus; also brother and sister—cancer of liver.

HERPES ZOSTER AND VARICELLA.

DR. W. P. LE FEUVRE (M.O.H. Knysna, South Africa) writes: With reference to the case reported by Drs. L. E. Green de Woolfson and W. H. Smith in the JOURNAL of May 29th (p. 902), may I point out that the appearance of the herpetic and varicellar eruptions in an infant of 8 months is probably a record as regards age *only*, as numerous similar cases have been reported in the JOURNAL and elsewhere, both in children and adults. An early case is to be found (at first mistaken for small-pox) in the Sydenham Society's *Transactions* for 1867. A recent case was also described in this JOURNAL on March 6th (female, aged 42), and in children aged 4 and 7 years respectively on December 6th, 1924, and August 22nd, 1925. The 8-months infant apparently inherited a very sensitive nervous system from her mother, as evidenced by the latter's attack of shingles three months previously, necessitating hospital treatment—an unusual event in the case of a comparatively young subject, such as I presume the mother to have been. As far as one can judge, it is this sensitiveness, either inherited or acquired, that decides what form the eruption shall take—herpetic, varicellar, or both—in those who have been in contact with either shingles or chicken-pox. The incubation stage seems to be practically the same in all reported cases. I am still wondering how long it will be before the two eruptions come to be recognized as part and parcel of one disease, which, as I suggested some years ago, might not unfitly be termed "varicella herpetica." In the case of a boy, aged 6 years, who came under my care about three years ago, the mother was intensely musical and highly strung, and the youngster seemed to inherit these same characteristics. After a short contact with chicken-pox he developed first an attack of shingles, necessitating morphine for the extreme pain and sleeplessness, and four days later (the usual interval) was covered with an ordinary chicken-pox rash. His elder sister, less nervous, was satisfied to take the disease in the shape of the varicellar eruption only.

AN ANCIENT NEEDLE.

DR. G. VARIAN (Watford) writes to record the case of a spinster, aged 74, who consulted him for a large extravasation and ecchymosis over the lower third of Hunter's canal and the adductors. As she had a high blood pressure the haemorrhage was attributed to this and its attendant pathological degenerations. "I saw her," Dr. Varian continues, "about a month later. She still complained of pain under the area affected, and on applying some pressure to the deep tissues a sudden little cone of skin appeared, on the point of which I pricked my finger. I removed a needle, of a type which has not been seen or made in this country for many years. It is a hand-made black steel needle, with a roughly squared eye end and a simple hole punched through for the thread. My patient never saw such a needle before and has no memory of its painful entry. I suggest that she sat on her mother's needle in early childhood."

ARSENIC IN APPLES.

IN his annual report Dr. W. J. Howarth, medical officer of health for the City of London, states the results of investigations into the presence of arsenic in apples brought from America. The only apples with indications of arsenical deposits were "Jonathans"; it was with apples from America corresponding to these that prosecution was instituted in another area. The fruit contained 1-700 grain of arsenious oxide per pound. As the quantity of arsenic was so small Dr. Howarth did not consider it necessary to restrict the sale of these apples, but he considers that fruit should be exported entirely free from arsenic, since, if small quantities of poison are disregarded in one food, other poisonous substances, also in small quantities, might be added to other foods, and the aggregate consumed might be considerable.

FOR the convenience of residents in the London area a showroom has been opened by Messrs. Boulton and Paul, at 135–37, Queen Victoria Street, E.C., where specimens of their motor houses, shelters, etc., may be seen.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 38, 39, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *152*.

Observations
ON
COMMON MISTAKES IN THE ARTIFICIAL FEEDING OF INFANTS.

BY
ERIC PRITCHARD, M.A., M.D.OXON., F.R.C.P.LOND.,
MEDICAL DIRECTOR OF THE INFANTS HOSPITAL, LONDON.

It is common experience that we learn more from our mistakes than we do from our successes, but in no sense is this more true than in connexion with infant feeding. It is a disadvantage rather than a blessing, both for himself and his patients, when the young practitioner is successful in this department of his work at the threshold of his career, for in such circumstances he is apt to regard himself as an expert and an authority in a matter of which no man can become a complete master, even though he devote a long life to the subject. We learn more from our own mistakes than we do from those of others, and I offer no apology for making certain confessions of the mistakes which I have made myself during many years of practice, for although they may not be so helpful to others as they have been to myself, they may possibly assist others to avoid falling into the same traps.

During his novitiate the practitioner learns very little about the details of infant management; at least, in my day he learned very little until he married and had children of his own; on these he could experiment and learn at first hand from bitter experience the full degree of his own incompetency. The worst thing that can happen to such a tiro is to beget a child of such irrepressible vitality that his sins of commission or omission remain unrevealed. I fed my first child, with the most perfect results, on milk carefully modified on a percentage basis by the Walker Gordon Laboratories. Exactly the same feeding had fatal consequences in the case of my second child—through no fault of the laboratories, but solely owing to my own incompetence—and it was that never-to-be-forgotten experience that determined me to devote my life to a study of the means of obviating such disasters in the future. I came across a somewhat analogous case the other day, when a young practitioner asked my advice in respect of a desperately wasted baby which had been fed in exactly the same method as two of his own infants, which, according to his account, had fared extremely well. The food employed was a baked flour sold under a particularly attractive and high-sounding title. As he was leaving the house he said, "By the by, do you happen to know what this food really is?" When I told him that it consisted of nothing more than baked flour sold at a fancy price he seemed greatly disturbed, and told me he always understood it was some artificial digestant.

It often takes a long time to learn the insistent truth that what is one man's food is another man's poison, and want of appreciation of this fundamental principle in infant feeding frequently leads the young practitioner to hold in high regard for general use certain peculiarly constituted preparations which have proved of signal service in the treatment of pathological conditions. For instance, infants who have been fed on rich nursery milk, with an excessive percentage of cream, and who have in consequence acquired intolerance of fat, may be fed quite rationally for a time on a malted milk which contains practically no fat but a very high percentage of malt sugar. The inexperienced person who is ignorant of the exact chemical composition of such and similar foods, and who does not realize the physiological necessity of balance, may very easily draw faulty inferences from his observations, and regard foods which are really suitable only for pathological conditions as physiological foods applicable for normal conditions. A great many of the ill balanced proprietary foods which are still on the market owe their reputation and popularity to causes of this kind.

Owing to recent discoveries of biochemists, and to elaborate and carefully conducted feeding experiments on animals, often carried out on whole colonies of quickly breeding varieties, we now know a great deal more about the essential requirements of animals and, by inference, the ultimate results of incorrectly balanced dietaries in the case of human beings, than we knew a few years ago—in fact, a great deal more than we ever learned or could learn from the observations of feeding experiments carried out on human individuals for very short periods and practically never for more than one generation. We are very apt to judge of the suitability, or the reverse, of certain methods of feeding or of particular foods by the immediate and not by their ultimate results. The human organism has such wonderful reserve powers, such remarkable powers of adaptation and compensation, that the full consequences of a defective dietary may remain latent or unobserved, not only during the greater part of infancy, but possibly during a whole lifetime. This has been clearly shown in the case of animals experimentally fed, and it may be read in the epidemiological histories of whole nations who have perpetuated the same faulty dietetic customs for several generations. If infants were capable of holding up the danger signal of distress immediately they were improperly fed, their feeding would soon be placed on a more satisfactory basis. But from the analogy of the feeding of lower animals we now have so complete a knowledge of the nutritional requirements of the human body, both from the point of view of development and maintenance, that, even in the absence of symptoms which attract attention, it is easy to predict what will be the ultimate consequence of any particular line of feeding. Even in such widely studied matters as the vitamin deficiency diseases we have no means of diagnosing their first beginnings except from the history of the feeding. We know, for instance, that the symptoms of scurvy in infants do not manifest themselves for some three or four months after the commencement of a vitamin-free diet. This is the reason for the astonishing practice, which is so prevalent in this country, of delaying the administration of antiscorbutics until after the third month of life. The argument is so plausible: infants under three months of age do not have scurvy; therefore they do not require antiscorbutics. If there is one period more than another when infants, and especially premature infants, stand in need of this and other accessory factors in their diet, it is during the first three months of life.

Another example of the delayed effects of faulty balance is the ultimate development of hyperchlorhydria in infants fed on whole milk, or unmodified dried milks; for a while they appear to thrive and do well, but if they can survive this monstrous liberty with their digestive and metabolic functions, they must, on grounds which are now thoroughly well understood, acquire an immense capacity for secreting hydrochloric acid, and they either die in an attempt to produce enough acid to overcome this buffer influence of the caseinogen, or suffer at a later date from the success of their early adaptability.

A considerable number of the dietetic misconceptions under which humanity is still groaning have their origin in the fallacy enunciated by the older physiologists that food subserves in the animal body the identical function that fuel subserves in the mechanical engine—namely, that of a potential source of kinetic energy and heat. The belief that the be-all and end-all of dietetics was to balance the intake and output by a careful adjustment of calorie values has put back the clock of scientific feeding by more hours than one cares to contemplate. It is perhaps hardly fair to describe the pioneer work of some of our greatest physiologists as wrong; their views and observations in these matters were true as far as they went; but they did not cover the whole ground—were in fact half truths, as the next generation of physiologists pointed out when they discovered the significance of balance, and when the present generation of physiologists further demonstrated the part which the accessory factors play in the utilization and combustion of the simple fuel foods.

The essential difference between the fuel required by a mechanical engine and the food which is shovelled into the furnaces of the animal organism is that, while the former should only contain sources of energy, food must contain either the ready prepared elements or the crude material out of which the latter can be elaborated for such

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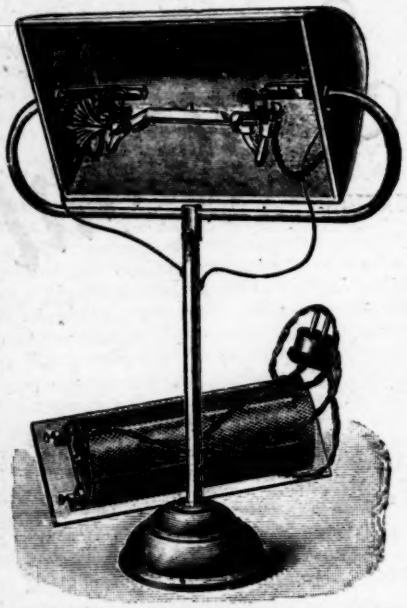

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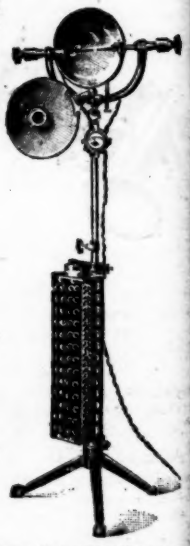

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WORMS.

Many of the more recent additions to our knowledge of worms are not yet commonly known. A few of the more important new facts are:

1. Worms are much more prevalent than is generally supposed. Their presence should be suspected in children showing signs of malnutrition, anæmia, gastritis, and loss of sleep.
2. It frequently happens that children are treated for phthisis when in reality they are infested with roundworms. Many cases of cough in children are cases of throat cough caused by roundworms, and not lung cough at all.
3. Roundworm larvæ migrate to the lungs causing inflammation and "parasitic pneumonia." They are suspected of being attendant factors in the development of tuberculosis.
4. The constant nibbling and sucking of the mucosæ of the intestine by worms produce abrasions and lesions which facilitate the entrance of micro-organisms.
3. Worms secrete poisons which are absorbed by the host and cause nervous disturbances.

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of which I have made many myself in my unregenerate days, before I based my estimation of quantities on calorie values.

Speaking of quantities, I may be allowed to draw attention to the serious mistakes to which the employment of such indeterminate measures as teaspoonfuls and tablespoonfuls may lead the unwary. An ordinary tablespoon has a fluid capacity of about one ounce, and not half an ounce as is generally supposed, while the actual weight of a level tablespoonful of such a dry food as glaxo or "cow and gate" milk is about three drachms. The fluid capacity of an ordinary teaspoon is seldom less than a drachm and a half, while its capacity for a dry powder is little more than half a drachm. From this it is obvious that serious mistakes may arise when more accurate means of measurement are not employed. As an example of the sort of error into which the employment of such inaccurate measures may lead us I may quote the following instance:

An infant was brought to the Infants Hospital with serious symptoms of nutritional failure; it had been fed on condensed milk, and I was anxious to know the exact quantity which had been given it. On inquiry I was told that it had been given one teaspoonful in three ounces of water for six feeds, giving a total quantity of six teaspoonfuls in the twenty-four hours, with a face value of 80 calories in the twenty-four hours. The deficiency in food value seemed to me to be so great that I attempted to check the estimate by asking how long a tin of condensed milk lasted. The mother told me that she used, on an average, three tins (1 lb. by weight each) every week. Reckoning on this basis I argued that the infant was daily supplied with about 7 ounces of condensed milk with a value of about 700 calories. The discrepancy between the 80 calories as estimated in teaspoonfuls and the actual and true quantity as estimated in milk purchased and used shows unquestionably the fallibility of the domestic measure.

I could multiply pitfalls of a similar nature almost indefinitely, but perhaps I have said enough. I submit, however, that recent development in our knowledge of nutrition has not simplified the feeding of babies, but has rendered it an infinitely more responsible and difficult task.

THE SCHICK TEST:

A Scheme for Active Immunization against Diphtheria in Public Health Practice.

BY

ERIC DONALDSON, M.D.Cantab.,

ASSISTANT MEDICAL OFFICER, COUNTY OF SURREY.

Although most medical men are familiar with the Schick test, yet for the benefit of those who have not had practical experience of it the following explanatory note may be of assistance.

The Schick test is a definite quantitative test to demonstrate the amount of diphtheria antitoxin in any given person. Those patients in whom the test proves to be positive have only a small amount of antitoxin, and are therefore liable to contract diphtheria, whereas those in whom the result is negative have sufficient antitoxin to ward off the disease. Those who are positive to the test—in other words, those who are susceptible to diphtheria—can be rendered immune by the injection of a prophylactic mixture.

The following figures show that there is sufficient evidence of the efficacy of these procedures to warrant their more extensive use in combating the disease.

In New York City for the ten years preceding the introduction of Schick testing and immunization, the average number of deaths from diphtheria was 1,337; in 1919 the number of deaths was 1,239. Since 1919, when modern methods were first introduced on a large scale, the number has fallen to 663. Similarly, in Chicago, there has been a fall from an average of 797 deaths to 239 deaths. It has also been shown that in 23 representative American cities the death rate from diphtheria has fallen an average of 10.3 per cent. per annum.[1]

In this country about 22,000 of the population have been Schick tested, and about 4,000 have been immunized. A large proportion of these cases are the children and staffs in institutions.[2] On one occasion reported, the inmates in an institution remained free from diphtheria although exposed to infection at school and in constant contact with children amongst whom the epidemic continued.[3] Dr. E. H. R. Harries of Birmingham has succeeded in entirely eliminating diphtheria among the nursing staff of the Birmingham fever hospitals.[4] It has also been shown that in other fever hospitals where nurses have been adequately protected by immunization, the incidence of diphtheria among them has dropped practically to zero, whereas no such drop has occurred where nurses are not thus protected.

In the summer of 1925 I immunized the children susceptible to diphtheria in an orphanage in Surrey. Within the previous eighteen months there had been two outbreaks of the disease in the institution and among the children of the elementary school attended by the orphans. No case of diphtheria has occurred in the orphanage since this work was carried out, although a number of cases have occurred in the school. During the summer holidays in 1925 two of the immunized children slept for three nights in the same bed as a child who was incubating diphtheria, but neither of them contracted the disease.

In a training ship where diphtheria had been endemic the boys were tested, and those found to be positive were immunized. As long as all the new entrants were immunized (where this was indicated) no case of diphtheria occurred, although there were many profuse carriers of virulent diphtheria bacilli.

These are a few of the results obtained in this country, but up to the present Schick testing and immunization have only been carried out on a small scale, in comparison with what has been done in the United States.

So far as I am aware there have been no failures—that is to say, genuine diphtheria has never occurred in a Schick-negative person. A certain number of failures have been reported, but it has been found on careful scientific investigation that these are not true cases of diphtheria; or it has been found that the Schick test has been improperly carried out. To establish a diagnosis of diphtheria in a Schick-negative person three conditions must be satisfied—namely:

1. The clinical picture must be typical.
2. Virulent Klebs-Loeffler bacilli—that is, as tested in a guinea-pig—must be present in the throat or nose.
3. A sample of blood taken before a therapeutic dose of antitoxin has been given must show that there is sufficient natural antitoxin to ward off an ordinary attack of diphtheria.

Immunity.

Immunity may be active or passive. The process by which the production of antitoxin in the tissues of an individual is stimulated, whether artificially or otherwise, is called active immunization. The immunity produced by this process is much more lasting than the immunity produced by the introduction of artificially prepared antitoxin into the circulation. The former lasts for years, and potentially for life; the latter lasts only for a short time, generally three to eight weeks.[5]

Active immunity is produced by the injection, at weekly intervals, of 1 c.cm. doses of diphtheria prophylactic. This preparation consists of toxoid (prepared by treating diphtheria toxin with formalin) and antitoxin. Three or four weekly injections are usually sufficient to produce immunity, but some individuals require further injections if they are found to be Schick-positive three months after treatment.

Defects of Present System of Combating Diphtheria.

It may be as well to point out here the defects of some of the older methods of preventing the spread of diphtheria. The two most widely used of these methods are:

1. The swabbing of all contacts, and the isolation of those giving positive cultures, those with negative cultures remaining free.
2. The injection of a prophylactic dose of antitoxin (500 to 1,000 units) to all contacts.

As regards the first of these procedures, six types of subject may be met with, from the point of view of their immunity and infectiousness,[6] and may be set out thus:

A. Schick-positive, swab negative.
B. Schick-positive, swab positive, bacillli avirulent.
C. Schick-positive, swab positive, bacilli virulent.
D. Schick-negative, swab negative.
E. Schick-negative, swab positive, bacilli avirulent.
F. Schick-negative, swab positive, bacilli virulent.

purposes as those of cleaning the machine, for lubricating it, for controlling its carburettors, its sparkers, its dynamos, its exhaust, and all the other elaborate mechanisms of the most complicated and perfect automatic engine. The mere supply of fuel to such an engine, no matter how well such fuel is mixed or balanced, is only a very small part of the duty of the stoker. And this is where the older physiologists, as well as the most modern percentage feeders, have gone so seriously astray; they have given infinite attention to the exact percentage relationships of the fats, the proteins, and the carbohydrates, and they have almost completely neglected the still more important duty—that of making provision for the control and running of the machine by providing the required accessory factors.

There are in milk, which one must regard as a complete and perfect food, three different classes of fuel, and there are also at least thirty-seven other elements or proximate principles, each one of which subserves some nutritional purpose which is of equal or perhaps greater importance, but is in no sense a fuel. We cannot believe that Nature, in her infinite wisdom, is so prodigal as to supply anything that is redundant or unnecessary, or so careless as to omit any essential in the food she supplies for the nourishment of the young; it is, indeed, implicit in the survival of the race that such must not be the case with respect to human milk. It is true that at present we do not know exactly how much of any of the vitamins or of the other accessory factors, such as iodine, or lecithin, or cholesterol, or iron, any baby or adult requires, but we are surely justified in believing that the representation of each in breast milk is of about the correct standard for the infant, as in the milk of other mammals their representation is correct for their respective progeny. It is possible that the representation in cow's milk is approximately the same with respect to most of them as it is in human milk, and if so the human infant ought to thrive when a given volume of cow's milk is substituted for a given volume of breast milk. But early experience taught the older physicians that whole cow's milk could not be digested like whole breast milk, and therefore cow's milk was diluted with one, two, or three parts of water, in order that the great excess of the indigestible constituent—that is, the caseinogen—might be watered down to the point of tolerance. A later school, recognizing that the infant suffered from the coequal dilution of the fat and of the sugar, added these to make up the deficit or supply the special requirements. A later generation recognized the need for making good the deficiencies of the vitamins and perhaps one or two other essential factors; but how many at the present time, when providing for these adjustments, think of the deficits of iron and iodine and perhaps a dozen other essential factors in nutrition? This, to my mind, is an explanation of some of the failures of feeding with cow's milk modifications, and of some of the apparent successes of whole-milk feeding, which on other counts has little to commend it.

Many years ago that great chemist Baron von Liebig enunciated his law of "the minimum," a law which to-day, in view of our more accurate knowledge of nutritional requirements, has more cogency than at the time of its formulation. This law is that the maximum degree of nutrition possible under any system of feeding or with any diet is determined by its greatest fault, and not by its greatest virtue. For instance, if we allow that some forty different constituents are requisite for a complete dietary, and that the faulty representation of any one of them in any particular diet allows only of a 50 per cent. realization of the possible maximum of nutrition, the net result will be only a 50 per cent. success, no matter what degree of perfection is attained by the thirty-nine other elements. It is quite easy to visualize such a hypothetical result in the case of such a default as that of a vitamin, but it is less easy to realize that the same catastrophe will follow faults in the supply of such little-considered elements as iodine, chlorine, fluorine, and many other constituents of diet which at the present time receive little consideration.

I have purposely included in the category of essential elements certain mineral constituents, for although it is well recognized by plant physiologists that for success in agriculture or floriculture the supply of a considerable number of mineral elements is absolutely necessary, the same need is not by any means realized by those who concern themselves with the nutrition of developing human beings.

Soils which are deficient in certain mineral elements will not produce the maximum, or even a good crop, until the required balance is redressed. In animal nutrition there is not only a comparable need of many different minerals, but a far more comprehensive one. Owing to the fact, however, that when any form of milk diet is employed in the feeding of infants there is never a complete absence, but only a relative shortage, of any required element, defects in this respect never make themselves obtrusive. In this connexion I would observe that there is practically always a great deficiency of iron in the artificial feeding of infants when cow's milk dilutions are employed as the basis of their diet, and further, that there is often a grave deficiency of iodine, potassium, and ionic calcium. I do not propose to discuss this point further than to indicate that any one single defect in this respect will, in accordance with Liebig's law of the minimum, reduce the standard of nutrition to a degree which is proportional to the default.

Mistakes in respect of such niceties of balance are to a large extent excusable, for the reason that, owing to want of exact knowledge, no clearly defined rules are available with regard to the quantitative or qualitative requirements; but there should be no excuse for gross mistakes with respect to the balance of the fuel elements or their calorie value, because we have certain general indications for their adjustment. I do not want to flog a dead horse, but I cannot help making some passing comment on the argument which I constantly hear—namely, that in whole-milk feeding the large excess of nitrogenous elements is justified on the ground that such excess is required because, owing to the indigestible character of its contained caseinogen, the infant cannot assimilate an adequate supply unless it is proffered in massive amount. It is to my mind a strange argument to contend that, because a particular element is incapable of digestion, it should be supplied in excessive amount. It might be logical to suggest that it should be given in a more digestible form or replaced by some more digestible equivalent, but to maintain that it should be given in larger amount requires a good deal of justification.

As there is an optimum balance with respect to the combination of the energy-affording elements of an infant's food—namely, with respect to the combination of the proteins, fats, and carbohydrates—so also is there an optimum as regards their united calorie value. The tolerance of the animal organism in this respect is admittedly great, but any serious default, either in the direction of excess or inadequacy, must interfere with the attainment of that optimum result at which we should aim.

I do not claim that the age, or weight, or sitting height, or any other single factor taken by itself, will give us an accurate measure of the calorie requirements of any particular infant, but whatever means we may use to arrive at an approximate estimate of the energy value of the food required, we ought at least to be consistent, and not vary the amount when we find it necessary to change some unsatisfactory combination of foods for one we believe to be better. Inconsistencies of this character, in changing from one food to another, are my common experience; the following instance may illustrate my point.

An infant was ordered a milk mixture of a certain definite composition, and of a value of 600 calories; when this did not answer a diet of condensed milk was substituted of a calorie value of 150. Another infant was directed to be fed on a dilution of half cream ("cow and gate") with a calorie value of 400. When this method of feeding was found to be a failure, a diet of almata was substituted for it with a calorie value of 800. The law of the conservation of energy is either applicable or not in the feeding of infants; if it is applicable such transgressions must inevitably bring their Nemesis. I may add that these two dietetic mistakes were not made by inexperienced practitioners, but were the directions given at two children's hospitals in London, and are of the kind

of modern methods of diphtheria control, and health visitors trained to assist them. When an outbreak occurred these officers could be sent to the area concerned and could then proceed to carry out the necessary work.

It should not be difficult to organize "mobile units" of this description. Obviously these officers would need to be tested, and if necessary immunized. All those who come in contact with diphtheria should be immune. There is no excuse nowadays for nurses, or others who have the care of diphtheria patients or suspects, contracting the disease. At the present time the number of medical officers who understand modern methods of combating diphtheria is quite inadequate. Large numbers require to be trained. The technique is very easy, and experience in interpreting results does not take long to acquire.

No candidate should be allowed to graduate in State medicine unless he or she is proficient in applying the Schick test, and understands the fundamental facts of immunity. Local authorities should insist on as many of their medical officers as possible being trained for this work.

In order to avoid haphazard and inefficient working and to co-ordinate the work throughout the country, certain standards would have to be laid down and an advisory committee would have to be appointed, consisting of experienced immunologists who could ensure that, although details of administration would obviously vary locally, fundamental points would not. This committee might also act as an investigation department, to examine into reported "failure" of the methods and to present any points of interest that might arise to research workers. Such a department could prevent the methods from falling into discredit through uninformed criticism, and by keeping the public informed would be able to frustrate the efforts of those misguided people who are striving to abolish the experimental method on which every advance in medical science depends. They would also save a good deal of time for research workers by relieving them of the trouble of extracting information on subjects of interest to them from a mass of irrelevant matter.

It would be an advantage to have at selected centres a number of reliable laboratories where the workers would be capable of making a scientific bacteriological diagnosis of diphtheria, and who would be able to perform properly controlled virulence tests, and to titrate antitoxin in blood samples. This need not be a matter of great expense, as existing laboratories could be utilized if brought up to date. It seems probable that in the near future (as pointed out by the BRITISH MEDICAL JOURNAL for February 13th, 1926, p. 295) the "diphtheria simultaneous prophylactic and indicating mixture" will simplify and shorten the whole process of testing and immunization.

Conclusions.

1. That the Schick test has been proved to be a reliable test for susceptibility or non-susceptibility to diphtheria, and that the immunity conferred by injecting toxin-antitoxin mixtures is lasting. My own experience in testing and immunizing an institution agrees with the experience of others.

2. That with careful preparation of the public by fully explaining the facts about diphtheria, and with the co-operation of the general practitioners, modern methods of diphtheria prevention could be employed on a national scale; and that a campaign on these lines, resolutely carried out, would result in the reduction of diphtheria incidence to negligible proportions. If properly organized the cost of such a campaign would be extremely small, compared with the enormous cost of treating thousands of cases annually. It is interesting to note that the outbreak at an orphanage in Surrey, already referred to, involved an expenditure of £500. Schick testing and active immunization (with swabbing of Schick-negative cases) cost about £25—certainly not more than £30—and the cost of testing the new-comers each year will be negligible.

I wish to express my indebtedness to Dr. Joseph Cates, county medical officer of health for Surrey, for entrusting me with the work of diphtheria prevention by modern methods, and for kindly permitting me to make use of the records of work done in the county; also to Dr. R. A. O'Brien and his colleagues of the Wellcome Physiological Research Laboratories, Dr. C. C. Okell and Dr. H. J. Parish, and Mr. A. T. Glenny, for the assistance, advice, and instruction which they have so generously given, and for carrying out antitoxin titrations and other laboratory work.

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A CASE OF CHLOROMA IN A CHILD.

BY

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CASES of chloroma in children are considered sufficiently rare to warrant the following notes of a case.

A girl, aged 4½ years, was referred to me for investigation as to the cause of pallor, weakness, and cough. On January 28th she was admitted to the Belfast Hospital for Sick Children under Dr. M. Brice Smyth, to whom I am indebted for permission to publish these notes.

She was well nourished, but pale, and had a certain amount of "fullness" in the upper eyelids suggesting proptosis; right-sided facial paralysis, probably due to haemorrhage into the facial canal, was present. The lungs presented no definite physical signs other than scattered rhonchi. The heart was normal. The spleen was easily palpable, reaching the umbilicus; enlargement did not appear to account entirely for its position.

A blood count showed red cells 1,480,000 and white cells 41,000. The film showed myeloblasts and numerous normoblasts, and the case was thought to be one of myeloblastic leukaemia.

On February 19th the red cells numbered 1,450,000, the white cells 56,000. Film as before. On February 25th the red cells numbered 1,430,000 and white cells 84,000. Haemoglobin 24 per cent. The film showed a large number of normoblasts and various types of white cells. Two days later it was noticed that the lymph glands had becme distinctly palpable. There was no obvious change in the size of the spleen. A left subconjunctival haemorrhage was also noted. The next day the left eyeball was more prominent than the right.

On February 28th the following differential count of the film was made:* Neutrophile polymorphs 27.6 per cent., monocytes 1.2 per cent., lymphocytes 8.4 per cent., metamyelocytes 7.6 per cent., myelocytes 12.6 per cent., premyelocytes 5.8 per cent., myeloblasts 29.6 per cent., micromyeloblasts 7.2 per cent.; 62.8 per cent. of abnormal cells. Normoblasts numbered 6,720 per cubic millimetre.

On March 3rd the left eyeball was much more prominent. An examination of the fundus oculi revealed numerous haemorrhages. The eyeball was protruded further and further, and at the end of a week was almost outside the orbit.

On March 11th there was a crop of petechiae on the arms and some purpuric spots elsewhere. The spleen was definitely larger. Death occurred that evening. Unfortunately the parents would not permit a *post-mortem* examination, but by a partial enucleation of the left eyeball a portion of the tumour was obtained. It was distinctly green in colour, and remained so for more than twenty-four hours in formalin.

Microscopical Examination.

On section the tumour was seen to be lymphosarcomatous in form, and it infiltrated the surrounding fat. It showed numerous lymph spaces scattered throughout. The stroma, while not abundant, was better developed than in a round-celled sarcoma and in places showed masses stained pink by van Gieson. The cells were mainly of the large round-cell type; there were several multinuclear cells, the nuclei being grouped together in the centre. Several mitotic figures were seen.

Summary.

1. A case of chloroma in a child of 4½ years is recorded.

2. The chief subject of complaint by the parents was pallor, weakness, and cough.

3. When first seen there was a right-sided facial paralysis, enlarged spleen, and the blood picture of a fairly acute myeloblastic leukaemia.

4. With the onset of haemorrhages, purpura, and rapid growth of the tumours, deterioration was rapid and death quickly supervened.

5. The colour of the piece of tumour removed was green.

Recognizing that in many cases all the clinical and haematological criteria of chloroma may be present and yet the tumours be white, this would appear to be a genuine case of the condition.

* Dr. A. Piney of the Institute of Pathology, Charing Cross Hospital, very kindly made this count. Dr. J. T. Lewis, honorary bacteriologist to the Belfast Hospital for Sick Children, was responsible for the others. I am much indebted to them both for their interest and help.

Among those with "positive swabs" who are isolated (probably together) there may be a number from classes B, C, E, and F. Class C is obviously those who are incubating diphtheria, and will develop the disease in a day or two. Class E is not susceptible to diphtheria, and, since their bacilli are avirulent, it is immaterial whether they are isolated or not. But the juxtaposition of Class F, the non-susceptible carriers of virulent bacilli—among whom there may be profuse carriers—and Class B, the susceptible subjects, involves danger, probably acute danger, to the latter. On the other hand, if the modern method about to be described is employed, such a juxtaposition will not occur, because the susceptibles and non-susceptibles will be separated.

As regards the second of these procedures—that is, the injection of prophylactic doses of antitoxin—there are two distinct disadvantages. First, such an injection may render the person injected serum-sensitive, and so complicate treatment in the event of a subsequent attack of diphtheria. Secondly, the immunity conferred is of a comparatively short duration. This was proved in the case of one institution observed by Dr. Okell, where an epidemic was checked by prophylactic doses of antitoxin, but cases occurred again within a few weeks. I came across two cases at the orphanage mentioned above, where therapeutic doses of antitoxin had been given, and within eight weeks they were non-immune. On the other hand, the experience of Park and his colleagues in New York, and of workers in this country, shows that the active immunity produced by the injection of toxoid antitoxin mixtures lasts for some years in a great majority of cases, and probably for life.

Another defect in the present system is that it is not sufficiently realized that the diagnosis of the true Klebs-Loeffler bacilius from its microscopic appearances is extremely difficult and in itself insufficient. There are certain forms, indistinguishable from it, which are quite harmless and do not produce diphtheria. This, therefore, involves a risk that people who have not got diphtheria are segregated with others who have; and, on the other hand, Schick-positive carriers of harmless diphtheroid organisms may be isolated, possibly for months, as true diphtheria carriers.

When a positive report is obtained it is advisable to have the cultures tested to see if they will produce diphtheria in guinea-pigs. Where the modern methods of Schick testing and active immunization are being applied it is important that medical men should have the above facts clearly in mind, otherwise confusion is likely to arise.

Proposed Scheme for Combating Diphtheria on a National Scale.

The practical utilization of modern methods for the control of diphtheria consists in a routine application of Schick testing and active immunization in interepidemic times; and the employment of these methods to gain control during an epidemic, which will be referred to as "emergency application." This will now be discussed under the following headings:

1. Routine application: (*a*) in resident institutions; (*b*) in special clinics; (*c*) in day schools; (*d*) for those in attendance on cases of diphtheria.
2. Emergency applications: (*a*) in resident institutions; (*b*) apart from resident institutions.

Routine Application.

Resident Institutions.—Diphtheria is conspicuously an "institutional" disease, and it is in institutions that modern methods can best be applied. The application of the Schick test is a simple matter in the hands of those trained to its use. One operator, with a trained assistant and efficient marshalling of those to be tested, can easily test fifty cases in an hour. At the end of seven days the positive cases can be separated from the negative, and active immunization can be commenced. With efficient organization the injection of toxin-antitoxin is a very simple matter, and takes up very little time.

Special Clinics.—At first sight it would seem to be a simple matter to have children under 5 years of age tested and immunized at child welfare centres, but if children were sent in large numbers this would interfere seriously with the ordinary work of the centres. Schick testing and immunization have been carried out at welfare centres, but I am of opinion that it would be simpler to follow the plan adopted at Fraserburgh and conduct special clinics at suitable intervals. By means of those clinics it should be possible to immunize the majority of children under school age. This is most important because, as pointed out by Park and Zingher, the mortality is greater among these than among older children; also there is a risk of their contracting diphtheria when they enter school.

Day Schools.—Schick testing and active immunization can be carried out in the schools with the co-operation of the teaching staff. The interference with school work need not be great. If the marshalling is properly arranged the interference is scarcely greater than at an average routine medical inspection. Moreover, once a school has been tested and the positive cases have been immunized it is only necessary to deal with fresh entrants. If younger children are being immunized at special clinics before entering school, the number to be dealt with in the schools will rapidly diminish. As many children as possible should be immunized before entering school, otherwise there is some risk of their contracting diphtheria while awaiting immunization.

Emergency Work.

A method of rapidly getting control of epidemics in institutions has been devised.[6] This method is applied in the following manner:

1. Schick test all persons in the institution.
2. If possible swab all persons, throat and nose.
3. In twenty-four to forty-eight hours, isolate all Schick-negative reactors.
4. For a few days see twice daily all positive reactors (to detect any who may develop the disease).
5. Test for virulence all positive swabs from Schick-negative reactors, release "avirulent," but rigidly isolate all "virulent carriers."
6. Begin at once to immunize all Schick-positive reactors.

The originators state that this plan depends upon the following "propositions," which are sufficiently true for the effective working out of the plan:

1. Schick-negative reactors are not susceptible to diphtheria.
2. Schick-positive reactors are susceptible to diphtheria.
3. Schick-positive reactors never harbour virulent bacilli detectable by ordinary swab culture methods unless they are suffering from or are incubating the disease.
4. Carriers of virulent bacilli are immune and are always Schick-negative reactors.
5. "Avirulent" bacilli do not cause diphtheria, and therefore "avirulent" carriers are of no importance to the public health authorities.
6. One efficient swabbing of a population gives a sufficient working knowledge of the location of infection—that is, all profuse, and therefore dangerous, carriers will be detected.

Independently of the originators of this plan, Dr. E. H. R. Harries worked out a similar scheme to control outbreaks of diphtheria in fever hospitals, and found it very effective.

Apart from resident institutions the scheme would be much more difficult to work, but if the organization were good there seems to be no insurmountable obstacle. The main difficulties would be that the whole population possibly would not be tested, and dangerous carriers might go undetected; and that to separate negatives from positives outside institutions would not be easy.

As regards the first difficulty, if the local practitioners understood the scheme properly their influence would help very materially to ensure that the vast majority would be tested. Moreover, in the presence of an epidemic objections would be far less numerous than at other times. Much could be done, too, by carefully worded explanations.

As regards the second difficulty, assuming that nearly all the population were Schick tested and swabbed, the dangerous carriers could be removed to the isolation hospital, which would not be unnecessarily filled with Schick-positive carriers of harmless diphtheroids.

For emergency work in rural districts it would be necessary for the county medical officer of health to have on his staff a number of medical officers trained in the use

British Medical Association.

PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

SECTION OF SURGERY.

Sir D'ARCY POWER, K.B.E., M.B., F.R.C.S., President.

DISCUSSION ON THE PLACE OF GASTRO-JEJUNOSTOMY IN GASTRIC AND DUODENAL SURGERY.

OPENING PAPERS.

I.—HERBERT J. PATERSON, C.B.E., M.C., M.D., F.R.C.S.,

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THERE is probably no operation in surgery which has added more to the sum of human happiness than gastro-jejunostomy. Nevertheless every new discovery and every improvement has some attendant drawbacks, and the very success of gastro-jejunostomy has led to its performance without proper indications and in unsuitable cases, and so has brought upon the operation discredit which is totally undeserved.

There are some who consider gastro-jejunostomy an out-of-date, if not, indeed, an obsolete operation. More complicated but less rational measures have been designed to supersede it. It is time that a stand should be made against operations which are unnecessarily severe. Surely our duty is to get our patients well with the minimum of surgical interference and with the minimum of risk. My contention is that in the great majority of cases gastro-jejunostomy is a thoroughly satisfactory treatment both for gastric and duodenal ulcers, provided it is properly performed and that prolonged and efficient after-treatment is carried out.

Let us consider for a moment some of the arguments which are put forward in favour of partial gastrectomy.

First, that it is a more certain cure. This has still to be proved. The operation of partial gastrectomy in the treatment of gastric ulcer is on trial, but the interval which has elapsed since it became a fashion is not long enough for us to judge as to the permanency of the cures. It is already certain that partial gastrectomy is not infallible. It is certain also that the mortality rate is higher. I am well aware that in the hands of a few experts the death rate may be little higher than that of gastro-jejunostomy; nevertheless few will be prepared to deny that partial gastrectomy is a more severe operation than gastro-jejunostomy, and that it is necessarily attended with a higher mortality. I agree with the opinion expressed by Sherren[1] that the death rate from the large and complicated procedures devised to supplant gastro-jejunostomy at least approximates to the combined deaths and unsuccessful cases after gastro-jejunostomy. I shudder to contemplate the probable mortality rate if gastrectomy became the operation of choice in all cases by all operators.

Secondly, it is alleged that as some 60 per cent. of chronic ulcers show malignant changes, therefore all gastric ulcers should be removed. The teaching that the common fate of a gastric ulcer is to become cancerous I regard as one of the most insidious heresies which have been invented to beguile and mislead the innocent surgeon. The evidence, if evidence it can be called, for this allegation is partly clinical and partly pathological, but is of the flimsiest description. It is indisputable that in a considerable number of cases of gastric cancer there is a history extending over years suggestive of gastric ulcer. Suggestion, however, is not proof, and a careful scrutiny of such histories leads to the suspicion that the symptoms are due, not to ulcer, but to intestinal stasis. Be this as it may, a diagnosis of gastric ulcer cannot be made on the clinical history alone, and we are not justified from such a history in assuming that the carcinoma has originated in an ulcer. So far from the clinical evidence being in favour of this view, it is absolutely opposed to it. The case may be stated as follows: If it be true that 60 per cent. of chronic ulcers are, or become, malignant, then it follows that often we must perform gastro-jejunostomy for ulcers which we believe to be innocent but which are in reality malignant. Therefore a large number of these patients should die subsequently from gastric cancer. We know that is not the case. Those who have investigated this point tell us that the proportion of those who die from carcinoma after gastro-jejunostomy for supposed simple ulcer is about 2 per cent. In my own cases 2.5 per cent. of the patients are said to have died subsequently from cancer. Further investigation into these cases has made me sceptical as to accepting such estimates. In the main they are based on statements made by the patients' relatives. Although death was attributed to cancer in 2.5 per cent. of those on whom I have performed gastro-jejunostomy for ulcer, I have been able to discover only one case in which the cancer was indubitably gastric, and in that case it was not at the site of the original ulcer. In the majority of the cases there was no certain proof as to the existence of cancer, and in others there was a primary cancer elsewhere than in the stomach. Further, if it be true, as has been alleged, that in 60 per cent. of the cases of gastric ulcer there is evidence of malignancy, then the logical conclusion is inevitable that in course of time every gastric ulcer will become malignant, which, as Euclid would say, "is absurd."

For many years I have been asking this plain and straightforward question: If it be true that gastric ulcer is so frequently the precursor of gastric cancer, why is it that a large number of patients do not die after gastro-jejunostomy performed for supposed simple ulcer? So far not even the late Admiral Sir Percy Scott's intelligent midshipman has come to the rescue, for as yet I have received no answer. This is not surprising, as the only two possible answers impale the opposition on the horns of a dilemma. Patients seldom die from gastric cancer after gastro-jejunostomy for supposed simple ulcer because either the ulcers are rarely malignant or because gastro-jejunostomy cures cancer. Those who teach that gastric cancer usually originates in gastric ulcer can take what comfort they can gain from either answer.

The pathological evidence has been based on the finding of small downgrowths of epithelium near the edge of the ulcer, which downgrowths are regarded as evidence of malignancy. In a recent admirable paper[2] Dr. J. H. Dible has given cogent reasons for disregarding these assumptions. I submit that the clinical reasons I have stated above are a death-blow to this pernicious bogy. Dr. Dible has completed the obsequies by cremating the corpse. *Requiescat in pace!*

Thirdly, it has been alleged that partial gastrectomy is less likely to be followed by jejunal or gastro-jejunal ulcer. This may or may not be true. I am old enough to remember that in the early days of gastro-jejunostomy a reason urged in favour of the posterior operation was that it was never followed by a jejunal ulcer. Indeed, it was a good many years after its introduction before a jejunal ulcer was reported as following this operation. Now we know that secondary ulceration is at least not less frequent after the posterior operation than after the anterior method.

THE REMOTE RESULTS OF GASTRO-JEJUNOSTOMY.

What are the remote results of gastro-jejunostomy? As a contribution to this discussion I have reviewed my cases of gastric and duodenal ulcer for the ten years ending 1923, and the results are tabulated in Table I.

TABLE I.—*Statistics of Gastro-jejunostomy, 1913-1923.*

Recovered			495
Died			4
Died since*	33		
Fairly well	61	... ...	410=82%
Quite well	316		
Bad result			37
Untraced			48
Gastric ulcer			172
Duodenal ulcer			323
Gastric+duodenal			4

* Cured of gastric trouble.

Adding together those who are quite well, those who are fairly well—that is, are well so long as they take some care

THE ABDOMINAL CRISES OF PERNICIOUS ANAEMIA.

BY

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MUCH attention has been directed to the simulation of the gastric crises of tabes by perforated gastric ulcer. At the present time the mistake of operating upon a patient with a tabetic gastric crisis is rare. During six years' continuous association with emergency surgery in widely separated clinics I have not come across a single example of this error, which has been eliminated by the routine practice of testing the reaction of the pupil and for the presence of the knee-jerk in every suspected case of gastro-duodenal perforation.

The object of this note is to call attention to another medical condition which simulates very closely an acute abdominal catastrophe.

The later stages of pernicious anaemia are occasionally complicated with what may be termed abdominal crises. They resemble so closely one of the recognized acute abdominal conditions, such as perforated gastric ulcer or acute pancreatitis, that when confronted with one for the first time even the most conscientious surgeon may be trapped. The ghastly pallor, especially in artificial light, is mistaken for that of profound shock or internal haemorrhage, and when this picture is combined with a history of sudden agonizing abdominal pain and vomiting, and is accompanied by abdominal rigidity, the difficulty in diagnosis is occasionally almost insurmountable, unless, of course, we are in possession of the knowledge that the patient is the subject of an aplastic anaemia. The explanation of the sudden attacks of abdominal pain is fairly clear. During the katabolism of large numbers of erythrocytes the liver is called upon to excrete a prodigious amount of bile pigments. These pigments are too concentrated to be held in solution, and are precipitated in the form of "bile mud," which gives rise to severe biliary colic. Furthermore, the subjects of these crises, being worn out by a long illness and an impoverished blood supply, react very strongly to the painful stimuli. This theory is supported by the following cases, in one of which I performed laparotomy. The gall bladder was enormously distended, and when opened was found to contain thick, black "biliary mud."

CASE I.

A Jew, aged 55, was admitted to the London Hospital on October 17th, 1922, at 2.30 a.m., as an "acute abdomen." He spoke no English, and the history was translated by a relative, who said that the patient was seized with sudden very acute abdominal pain seven hours previously. The pain was at first in the epigastrium, but later became general. He had vomited several times. As far as could be gathered the patient had previously been quite well, except for indigestion. The patient was exceedingly pale, and obviously in great pain. The abdomen did not move freely with respiration, and there was board-like general rigidity and tenderness, especially marked in the epigastrium and right hypochondrium. The liver, spleen, and kidneys could not be felt. The rectal examination and examination of urine were negative. The heart and lungs were clear. A diagnosis of perforated gastric ulcer was made, and laparotomy performed. The only abnormality found was a very distended gall bladder. By cholecystotomy a large quantity of biliary mud was evacuated. Three days later the patient became comatose, and died shortly afterwards. It was at this time ascertained that he had been in hospital one year previously with advanced pernicious anaemia.

CASE II.

A woman, aged 58, was admitted to Dudley Road Hospital on January 25th, 1926, with a history extending over two years of frequent attacks of acute abdominal pain. The pain was always most marked in the left hypochrondrium and passed through to the back. The present attack began four hours before admission, and was considerably more severe than any of the previous ones; the patient had vomited. On examination in artificial light she appeared to be somewhat jaundiced. The tongue showed evidence of superficial glossitis. There was general abdominal tenderness and slight upper abdominal rigidity. The spleen and liver were enlarged, and the latter distinctly tender. A diagnosis of gall stone colic was made. Next morning it was noticed that the patient was not jaundiced in the ordinary meaning of the term, but was of a bright lemon tinge. A colour index was immediately taken, and gave typical reading for pernicious anaemia. She was transferred to the medical side, where this diagnosis was confirmed.

THE TREATMENT OF VARICOSE VEINS BY INJECTION.

BY

A. H. DOUTHWAITE, M.D.LOND.

THE necessity for an efficient non-surgical treatment of varicose veins is emphasized by the ever-increasing number of advertisements of quack remedies in the press. The standard works on surgery affirm that, short of operation, the only treatment lies in mechanical support. As the result of two years' experience in the production of thrombosis in varicose veins, I am convinced that this line of treatment is superior to excision.

The procedure originally suggested by Genevrier has been followed throughout. The solution used is composed of quinine hydrochloride 4 grams, urethane 2 grams, in distilled water 30 c.cm. A pneumatic tourniquet is applied with moderate pressure above the line of vein to be dealt with and 1/4 c.cm. of the solution injected into the lumen through a fine hypodermic needle. Perivenous administration is usually unnecessary; it is not, however, contraindicated, as the resultant inflammation is not severe, provided only a few minims are introduced outside the vein. The puncture is sealed with collodion, which may be removed the same night, and the injection repeated about two inches further up the vein. It is wiser not to introduce more than 2 c.cm. at one sitting.

The amount of pain accompanying the artificial thrombosis varies greatly in different patients, but is never sufficient to render walking impossible, and in the vast majority of cases little or no discomfort is experienced. All my patients have come to my consulting room and returned home in their usual manner. Several of them played tennis on the following day.

With very large varices the same areas may have to be injected two or three times. As a rule, however, one injection is sufficient for each two or three inches of vein treated. Of the 88 cases dealt with all have been completely successful, and no recurrences have as yet been observed. Initial swelling of the vein was not uncommon, but this soon subsided, and after a few weeks it may be felt as a nodular cord, causing no bulging on the surface of the leg unless it be situated over the subcutaneous surface of the tibia.

The relief of the lancinating pains or bursting sensations associated with the presence of varicose veins is very striking, and patches of eczema and ulcers often heal completely.

The cases treated were not selected. Many of them occurred in fat, middle-aged women, the veins extending up both legs into the thighs; yet they responded to treatment as readily as young adults. One lady was purposely avoiding a second pregnancy on account of her previous unhappy experience with varicose veins. Artificial thrombosis was produced, and she has since had a child with no mishap or recurrence of venous trouble. When commencing this treatment it is natural to be anxious lest embolism occur. The thrombosis appears, however, to be very firm and adherent, and has never given rise to embolic disturbances in injections which I have given—numbering more than a thousand.

The disability produced by varicose veins in this country is enormous. Thousands of otherwise healthy men were unable to take active part in the war on this account. Hundreds of men and women have to give up work to which they have been trained because it entails much standing. Furthermore, modern fashion decrees that the feminine leg shall be covered by thin silk only. The unsightly bulging of varices in this locality occasions the patient much distress. The advantages of this treatment over operation are obvious. Neither work nor pleasure is interfered with; neither preparation nor anaesthetic is required. If the treatment is carried out carefully and with reasonable dexterity no harmful effects will follow.

duodenal ulcer. Therefore, in my view, duodenectomy is a totally unnecessary operation; it is one of the most tedious operations in surgery, the difficulties and dangers being far greater than with gastro-jejunostomy, and the remote results problematical.

In my opinion there is a further indication for gastro-jejunostomy—namely, that it should be part of the treatment of a perforated gastric or duodenal ulcer. I am convinced that it is a life-saving measure. When performed in addition to suture of the perforation and drainage, convalescence is smoother and more uneventful and the patient's recovery is more speedy and more sure.

It may not be amiss to repeat that gastro-jejunostomy should never be performed except when there exists an ulcer which can be seen and felt. It should never be done on a clinical diagnosis, however clear and definite the symptoms. Further, gastro-jejunostomy will not cure tabes dorsalis, migraine, gall stones, or cancer of the intestine; yet more than once I have operated on patients on whom gastro-jejunostomy had been performed for one or other of those conditions. Neither will gastro-jejunostomy give good results if a gall stone or a diseased appendix be left in the abdomen. Often we can learn more from our failures than from our successes. It is pertinent to inquire whether the unsuccessful cases would have been in the list of cures had some more radical procedure than gastro-jejunostomy been the operation of choice. In the series I have given there are 7 to 8 per cent. of known failures; of these approximately 2 per cent. are due to jejunal or gastro-jejunal ulcer, and 2 per cent. to chronic disease such as phthisis, chronic nephritis, or cancer elsewhere than in the stomach; 3 per cent. were apparently due to failure to reduce the gastric acidity, and 0.5 per cent. to adhesions or other complications incidental to abdominal operations. It is open to grave doubt whether partial gastrectomy *per se* would reduce the number of these unsuccessful results; on the other hand, there is no doubt that they would be reduced if the patients could and would keep to a more suitable diet.

THE IMPORTANCE OF AFTER-CARE.

This cannot be emphasized too strongly, for gastro-jejunostomy is but an incident in the treatment of gastric and duodenal ulcers. A prolonged period of restricted diet is imperative, especially in cases in which there is hyperacidity before operation. In all cases of hyperacidity increase in diet should be gradual and should be controlled by gastric analysis at regular intervals.

In dealing with some of the poorer hospital patients it is pathetic to restore a patient to health only to see the result of a successful operation marred through the inability of the patient to obtain adequate and suitable food. Two urgent needs to-day are convalescent hospitals where patients could have a prolonged period of rest and careful dietary amid healthy surroundings, and a system of "after-care" by which treatment could be continued on their return to their homes. Until these desiderata be secured our work is but half done. Through lack of them the value of the great work done by our hospitals is depreciated enormously and a corresponding economic loss falls on the nation. No detail is too trivial if it can aid us in our quest for perfection. We must use all and every means in our power to attain this ideal. With more efficient after-treatment gastro-jejunostomy will yield even better results than we know now.

In conclusion I cannot do better than quote a sentence from a paper by Moynihan,[3] which admirably expresses my own view: "I am an ardent and a sanguine advocate of this operation [gastro-jejunostomy], than which I think there is none in all surgery more completely satisfactory." These words are as true to-day as when they were written. With them I am in cordial agreement. I share the ardour and conviction of his advocacy. The worth of gastro-jejunostomy has been proved by time, and its value is inestimable provided it is used with judgement and with discretion in its proper place and with that

"Good sense, which only is the gift of Heaven,
And tho' no science fairly worth the seven."

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II.—PROFESSOR H. FINSTERER, M.D.,
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IN my opinion the results of routine gastro-enterostomy in gastric and duodenal ulceration are not satisfactory because (1) the operation does not generally lead to the healing of the ulcer; (2) gastro-duodenal ulcers are not a very unusual complication of the operation; (3) haemorrhage from an unhealed ulcer is fairly frequent, and a perforation after gastro-enterostomy is not unknown. These were some of the reasons why certain Continental surgeons, such as Riedel, Payr, Clairmont, Haberer, and I myself decided in favour of the resection instead of gastro-enterostomy in gastric and duodenal ulceration. Since 1919 I have employed resection of the stomach in almost all cases which were not complicated with acute perforation; I have performed 593 resections for gastric and duodenal ulcers and 5 gastro-enterostomies for duodenal ulcer. It is evident from these figures that in my opinion gastro-enterostomy occupies a very minor position in gastric and duodenal surgery.

The objections to resections are that the mortality is much higher than in gastro-enterostomy, and that despite the resection recurrences are observed. In my material the mortality in resection for gastric ulcers was high (16.6 per cent.) before the war and during the war because of my lack of experience in resections of the stomach up to then, and because at that time in resections of penetrating ulcers the base of the ulcer was always excised from the pancreas because of a suspicion that these ulcers might become malignant. These resections of part of the pancreas led in many cases to pancreatitis, and increased the mortality. Besides this, during the war deaths from peritonitis without leakage were frequently observed because of poor asepsis due to war conditions. Since 1919 in resections for gastric ulcers the mortality has become lowered to 4 per cent. (175 resections with 7 fatalities) and in duodenal ulcers to 2 per cent. (357 cases with 7 fatalities). Fatalities were due mostly to peritonitis; there was one case of embolism, and haemorrhage occurred after operation in a patient suffering from severe cirrhosis of the liver in addition to his ulceration. But there was no fatality through operative shock or pneumonia in all the gastric resections, although 87 patients were from 60 to 78 years of age.

It is remarkable that resection for duodenal ulcers shows better results than for gastric ulcers. The dangers of this operation were avoided, since in all cases of duodenal ulcer in which the penetrating ulcer had extended as far as the papilla, or where the common duct could not be separated from the callosities, the ulcer was left in, and the stomach resection for exclusion was performed. In 1918 I recommended this method in order to avoid the gastro-jejunal ulcer, which was frequently (15 to 27 per cent.) observed after Eiselsberg's exclusion. My method was later employed in many clinics (de Quervain, Zaajer, Reichel, Burk, etc.), whereas Haberer rejected this method, because he affirmed that the excluded pylorus would cause a recurrence. The removal of the pylorus raises the mortality through leakage in the blindly closed duodenal stump. In 72 resections for exclusion in which the pylorus was not removed I had 2 fatalities—a mortality of 2.7 per cent.; whereas in 29 cases in which the pylorus was removed there were 5 fatalities—a mortality of 17.4 per cent.; 3 of the deaths were due to peritonitis following on a leakage of the blindly closed duodenal stump. As in my material the permanent results have not been improved through the removal of the pylorus I as a rule perform the typical resection for exclusion and remove the pylorus only in those cases in which the ulcer is located in the descending part of the duodenum, so that a safe closure of the duodenum can be expected. In these cases I put in a rubber tube to prevent peritonitis due to leaking.

In very hypertrophic stomachs the excluded part of the antrum must be greater; in those cases it may be advantageous to remove the excluded part with the pylorus and the duodenum in a second operation four to six weeks later, which is very easy, as the duodenal ulcer will already be healed. In this way the dangerous resection of the penetrating duodenal ulcer is done in two stages, each being

in their diet—and those who have died from other diseases, but were quite well after their operation, it is seen that 82 per cent. may be regarded as cured.

The percentage of cures is lower than in my previous series, and lower than the percentage given by some other writers. There are two reasons for this. First, I have taken the percentage as that of all cases submitted to operation, and not the percentage only of those patients who recovered and have been traced. All the untraced cases are counted as "not cured." If, as is done by some writers, the untraced cases were disregarded, and the percentage of cures calculated with regard to the cases traced, the cures would be 91 per cent. Obviously, however, this is a doubtful method of representing the case. Secondly, the series includes nearly 300 operations on war pensioners at the Ministry of Pensions hospital, and it is these cases which reduce the percentage of cures. Most of the pensioners were bad subjects, out of work and in straitened circumstances, and not in a position to pay careful attention to their diet. For the same reason the incidence of jejunal ulcer among those patients is high. I am well aware of the danger of making any assumptions in drawing conclusions from statistics. As Sir Berkeley Moynihan once said wittily, "statistics may be made to prove anything, even the truth." Nevertheless I think it is justifiable to point out that if even half the untraced cases were well, the percentage of cures would rise to 88 per cent. It will be noted that only 7 per cent. of the cases were ascertained to be unsatisfactory. I think it is not an exaggeration to say that in patients who can and do take reasonable care of themselves the proportion of cures is over 90 per cent. The Mayos, Moynihan, Sherren, and others have reported a like proportion of successes.

Up to the year 1907 the anterior operation was the method I employed. In the year 1906, in the columns of the *Lancet*, I had a long and friendly clash of arms with Sir Berkeley Moynihan, who thrust and parried with that polished dialectic rapier which he handles with such skill. He disagreed with my advocacy of the anterior operation, and prophesied that soon I would be a convert to the posterior method. Twenty years later, in spite of those rapier thrusts, I am still alive—an unrepentant heretic. As a result of Sir Berkeley's persuasion and a visit to the Mayo Clinic I adopted the posterior method. During the ensuing years the impression grew upon me that the remote results of the posterior method were less good than I had obtained in former years by the anterior operation. In the course of time this impression became a conviction, a conviction possibly not demonstrable by statistics, but one the truth of which has been forced on me by a comparison of the late results in my patients. My experience is that the good results of the anterior operation are better than the good results of the posterior operation. Consequently, since the war I have adopted the anterior method almost exclusively, and in Table II are set out my cases divided into two groups.

TABLE II.—*Results of Gastro-jejunostomy.*

	Anterior.	Posterior.
Recovered	384	111
Died	4	0
Quite well	244	72
Fairly well	52	9
Died since (cured of gastric trouble)	27	6
Bad result	28	9
Untraced	33	15

As the proportion of untraced cases in the posterior method group is higher than in the anterior group, it is not possible to make a fair comparison of the results of the two methods. What difference there is is in favour of the anterior method, but I do not suggest drawing any comparisons from these statistics.

How does Gastro-jejunostomy act?

For many years I have taught that gastro-jejunostomy is a physiological operation. The anastomosis between the stomach and jejunum allows small quantities of bile and pancreatic juice to "back-flow" into the stomach and so reduces the acidity of the gastric contents, and also neutralizes hypersecretion. This is Nature's method of lowering the acidity of the gastric juice. In health the gastric contents are modified by the intermittent regurgitation of bile and pancreatic juice through the pylorus. Gastro-jejunostomy increases this reflux and allows of it even when there is pyloric spasm. For years I was as one crying in the wilderness. This hypothesis was received with scepticism by many and scoffed at by some. To-day, many of the "multitude make virtue of the faith they have denied." The admirable experimental work of Dr. Charles Bolton has proved the correctness of this hypothesis. As yet no other satisfactory explanation of the beneficent effects of gastro-jejunostomy has been put forward. Anterior gastro-jejunostomy results in a slightly greater "back-flow" of alkaline secretion than does the posterior operation, and this may be the reason why the results of the anterior operation are slightly better than those of the posterior operation. Operations of the Y type are quite unsuitable for the treatment of gastric and duodenal ulcers, as they short-circuit the bile and pancreatic juice so that they do not reach the stomach.

Jejunal and Gastro-jejunal Ulcers.

The most serious remote complication of gastro-jejunostomy is the occurrence of a jejunal or gastro-jejunal ulcer. There were twelve instances of this in the present series (2.4 per cent.). This is slightly above the probable incidence of the complication, but six of the cases occurred among the pensioner patients, owing to the causes I have already mentioned. In eight instances the secondary ulcer followed the anterior operation (2 per cent.), and in four instances the posterior operation (3.6 per cent.). It would, however, hardly be fair to infer from such a number of cases that there is this difference in the incidence of this complication after the anterior and posterior operations. In three instances the result was fatal—in one case from a perforation, fatal before any operation could be performed, and in two others, in both of which the ulcer perforated into the colon, death followed the second operation. Whether or not secondary ulceration be more frequent after the posterior method, there can be no question that after this operation it is far more difficult to treat. Operation for a gastro-jejunal ulcer following the posterior operation is one of the most difficult, if not the most difficult, task in surgery. After the anterior operation the surgical treatment of a gastro-jejunal or jejunal ulcer, although not easy, is a very different problem. The predisposing if not the exciting cause of secondary ulceration is hyperacidity. At any rate I have not seen a case in which marked hyperacidity was absent. It is, therefore, a complication which may be prevented by dietetic and medical treatment. It is met with rarely in private patients, and when it occurs it is usually in those who after the operation have lived "not wisely but too well."

The Present Position of Gastro-jejunostomy.

What, then, is the present position of gastro-jejunostomy in the treatment of gastric and duodenal ulcers? Gastro-jejunostomy is the operation of choice for all cases of gastric ulcer except those in which there is a suspicion that the ulcer is a cancerous one. In his Hunterian Lecture in 1920 Sherren expressed the opinion that "gastro-jejunostomy for gastric ulcer will become the less frequent operation." Further experience has modified his views, for this year he has said: "My mature opinion is that gastro-jejunostomy is still the most satisfactory treatment for duodenal ulcer and all cases of free gastric ulcer, and that its results equal, if they do not excel, those of any other major surgical operation." I go further than this, for I believe that gastro-jejunostomy will in most instances bring about the healing of an ulcer even when it has eroded the pancreas. This is no mere surmise, for in a number of instances I have seen a large excavating ulcer completely healed in patients who have died from some other cause years after the performance of gastro-jejunostomy. The results of gastro-jejunostomy are so satisfactory that more drastic measures may be wisely and safely deferred until the simpler operation has been tried and failed.

While there may be difference of opinion as regards the value of gastro-jejunostomy in the treatment of gastric ulcer, there can be no question that success can be attained by gastro-jejunostomy in over 90 per cent. of the cases of

anastomosis which favours the recurrence. I have not performed Y-shaped anastomosis for four years. By this method also, and even after repeated operations, permanent recovery may be expected. In two of my cases four operations were performed by other surgeons without success. One of these was a resection of the stomach (antrum and pylorus); through a very extensive resection these patients were cured.

Of especial interest is the success in the following case of a man aged 33. He was first treated by a posterior gastro-enterostomy for duodenal ulcer followed by excision of the anastomosis for gastro-jejunal ulcer, and anterior gastro-enterostomy with entero-anastomosis. The antrum with the pylorus and anastomosis loop were next excised for a large gastro-jejunal ulcer according to the Billroth II method. Owing to stenosis resulting from gastro-jejunal ulcer a further gastro-enterostomy was performed. A gastro-jejunal ulcer formed on this anastomosis with perforation into the transverse colon (fistula gastro-colica) and was followed by resection of the transverse colon, jejunum, and a great part of the stomach, only one-fifth being left; lateral anastomosis of the colon, end-to-end anastomosis of the jejunum, and below this an anastomosis between stomach and jejunum (Hofmeister-Finsterer method). Each of these operations was performed by a different surgeon, the last by myself. Since that time, two years ago, the patient has remained absolutely well and has gained more than 40 lb. in weight.

The symptoms of too small a stomach do not depend on the size of the remaining part of the stomach, but on the width of the anastomosis. In my cases they have more frequently been observed in resections after the Billroth I method, where a greater part of the stomach remained than in my operation, but the anastomosis became narrowed.

The possibility of severe diarrhoea is also an objection to extensive stomach resections, but up till now I have not met this complication. I should like to emphasize the fact that I have not yet observed cancer develop in a stomach stump after the large resections.

CONCLUSION.

As in my material the immediate mortality in resections for ulcer is not much higher than in gastro-enterostomy, and the permanent results are much better, I prefer resection to gastro-enterostomy.

In gastric ulcers I perform resection in every case, even in old patients, because the danger of malignant degeneration is great, and it is almost impossible to recognize the degeneration during the operation.

In duodenal ulcers I prefer resection of the ulcer with a large part of the stomach. In non-resectable ulcers I perform the stomach resection for exclusion. As the permanent results depend on the extension of the resection, I remove the pylorus only if an absolutely safe closure of the duodenum can be expected. In old patients with a non-resectable duodenal ulcer I perform a gastro-enterostomy.

In every resection the pylorus and two-thirds of the normally sized stomach are removed, and, as a rule, an end-to-side anastomosis is performed between the reduced opening of the stomach stump and the first jejunal loop. As the Billroth I method shows a higher mortality and no better permanent results, I do not consider it the method of choice.

In gastro-jejunal ulcers it is necessary to perform a very extensive stomach resection and to avoid the Y-shaped anastomosis. In this way a good permanent result can be obtained after repeated operations, therefore I never refuse an operation even in apparently incurable cases.

GENERAL DISCUSSION.

Mr. K. W. MONSARRAT (Liverpool) said that questions of this character might be discussed from two points of view: they could either analyse results of different technical procedures, or they could discuss the subject from the other standpoint having regard to the nature of the morbid process requiring remedy. He preferred to discuss the subject of gastro-enterostomy from the second point of view. In stenotic lesions the problem was simple as there was no longer active ulceration. The patient had recovered from his morbid process, but was left with a mechanical obstruction. Uniformly good results were obtained by a short-circuit. The problem was more complicated when actual ulceration was present. Full consideration of recent work supported the view that ulcers in the upper alimentary canal were secondary to disordered mechanism. Preceding the development of duodenal ulcers there occurred a hypertonus leading to rapid and early discharge of gastric contents into the duodenum, and a late pyloric spasm which checked regurgitation and produced a retention of gastric secretions during the hunger period. The result of this disorder was that as soon as food entered the stomach the duodenum was flooded with active gastric juice, which was damaging to its mucous membrane and produced necrosis in many cases. The problem was how to arrest the process of ulceration; how to suppress the hypertonus. Gastro-enterostomy could diminish the hypertonus if it provided a sufficient discharge of jejunal contents into the stomach. The effect of the discharge of fluid or food into the stomach, whether by the oesophagus or any abnormal channel such as a gastro-jejunal stoma, was to bring about relaxation of the hypertonus. With active ulcers, however, this was not enough. The ulcer should be protected from contact with gastric secretions, and this could be brought about by a temporary pyloric occlusion. The speaker added that hypertonus might persist in spite of gastro-jejunostomy, when it did, it depended upon such causes as mouth infections, infections of other viscera, irritability caused by certain foods, and certain forms of intoxication, such as that of tobacco. These primary causes of the hypertonic habit had to be sought for and eliminated, otherwise a definite risk of an ulcer developing in the region of the anastomosis was run.

In simple gastric ulceration the disordered function was characteristically different; it was pyloric spasm of early onset, and hypotonus. The result was retention of gastric contents in the stomach for an unduly long period. On the whole there was a tendency to hyperacidity, but he no longer considered free acid content of the gastric juice of primary importance in regard to ulcer production either in the stomach or duodenum. The remedy for gastric ulceration was excision of the actual ulcer area and the prevention of gastric stasis. Gastro-enterostomy did this, but the site of the anastomosis was of prime importance: it should be as near the pyloric end as practicable and of ample size. If high gastro-jejunostomy was performed there would remain a large pyloric segment where stasis persisted, and if this obtained, a recurrence of ulceration in this segment was likely. In actual experience they all knew that this was what occurred. In gastric ulcer gastro-jejunostomy was essentially a drainage operation, a short-circuit with an object in view which was primarily mechanical. When the extent of the lesser sac towards the right made it difficult to obtain an anastomosis with the pyloric part of the stomach he discarded gastro-jejunostomy for pyloroplasty. In the treatment of duodenal ulcer they aimed at relieving the hypertonus by making a large opening, through which regurgitation or admixture of jejunal and gastric contents would be considerable. The position of the anastomosis was not of prime moment. In gastric ulcer they desired to bring about an early and complete emptying, and the position of the anastomosis in relation to the pylorus was of great importance. In both cases the speaker was in the habit of making the gastric incision parallel to the greater curvature. Unless the stomach was much dilated he found it impossible to obtain as large an opening as wanted by making a vertical gastric incision.

Lastly, Mr. Monsarrat referred to a certain type of case he met from time to time, where he failed to find actual ulceration in the duodenum, although the clinical history was typical and the radiological evidence showed typical derangement of gastric function. In some of these cases, although there was no ulcer, there was evidence of active duodenitis. He did not hesitate to perform a gastro-enterostomy with temporary occlusion of the pylorus, just as though there were duodenal ulceration present. He believed that duodenitis was due to the same disorder of mechanism as duodenal ulcer, and was the first stage in the development of actual ulceration.

almost without danger. In cases with a very movable descending part of the duodenum I performed an end-to-side anastomosis between the partially closed stomach stump and the mobilized descending part. The advantage of this method is that good permanent results can be obtained with less extensive resection of the stomach (only one-third to one-half), as recurrence in the duodenum below the papilla is not to be feared.

The method of resection is of some importance for the immediate and permanent results. The method I generally use is a modification of the Billroth II developed by Hofmeister and myself. With this modification the disadvantages of the Billroth II method and its modification after Krönlein-Mikulicz—namely, the retrograde filling of the duodenum and bursting open of the duodenal closure followed by peritonitis—can be avoided. Up to now I have not observed any leakage or suture insufficiency.

Down to 1914 I performed the sleeve resection of gastric ulcers in 9 cases, but the permanent results were not satisfactory. Since 1914 I have always removed the pylorus. In ulcers reaching from the pylorus to the cardia or located near the cardia I perform a curved resection. In penetrating ulcers the stomach is separated from the base of the ulcer (pancreas, liver), leaving the base in. Since it is impossible to recognize the malignant degeneration of a gastric ulcer during the operation, I have performed no gastro-enterostomy for the last seven years, but have resected all gastric ulcers.

The Billroth I method is greatly favoured by Haberer; I use this method only in cases in which the duodenum is very broad, as otherwise one has to deal with stenosis of the anastomosis. In old or cachectic patients the danger of leakage is very great, as the power of healing is not sufficient and the sutures cut through on the third to the fifth day because tension is caused by every contraction of the stomach. With Haberer's modification there is no danger of stenosis and less danger of leakage, therefore I prefer this method to the original Billroth I method.

In acute profuse haemorrhages resection is the best method of stopping the bleeding. The results depend first on the duration of the profuse haemorrhage and the degree of the degeneration of the parenchymatous organs through anaemia. In the early operation (up to twenty-four or even forty-eight hours after the onset of the profuse bleeding) the results of the resection are good (26 resections with one death in a case of very extended gastro-jejunal ulcer=3.8 per cent. mortality), while in late operations, on the third to the fourteenth day, the results are unsatisfactory (28 resections with 7 fatalities=25 per cent.).

The mortality in resections for ulcers ranges from 2 to 5 per cent.; it is not much higher than the mortality of gastro-enterostomy, especially if the deaths from perforation or haemorrhage of the ulcers which will not heal are included. Nordmann states that in these cases the mortality with resection is lower (4.5 per cent.) than the mortality with gastro-enterostomy (4.7 per cent.). In Eiselsberg's clinic the mortality in resection was 3 per cent. in 449 cases during the last few years. The best results were achieved by Moynihan, who reported a mortality of 1.6 per cent. in resection for gastric ulcers. In over 500 operations—gastro-enterostomy and gastro-duodenostomy—for duodenal ulcer Moynihan has had no deaths during the last ten years.

The permanent results are of the greatest importance, as that method which shows not only the lowest mortality but also the greatest percentage of good permanent results can alone be the method of choice. The value of a method can be demonstrated through useful statistics. To obtain absolutely reliable statistics it would be necessary to get answers from all patients or to re-examine them. Statistics in which more than 10 to 15 per cent. of untraced cases are included cannot prove the value of the operation, as, especially among these cases, there may be many uncured patients, who do not reply because they believe that an unsatisfactory operation was the cause of their not being cured. Of 450 patients on whom I performed resection between 1911 and 1923, 43 were untraced—9.5 per cent. In many statistics this percentage is higher—15 to 30 per cent. and more.

The permanent results of resections for gastric ulcers are very satisfactory. Among 105 resections which were performed from 1911 to 1923, 103 have been cured=98 per cent. The patients have no diet limitations; they have gained up to 60 lb. in weight, and are able to do hard work. Two patients are restricted to a certain diet; otherwise they complain of some stomach symptoms—heartburn and eructation; in these cases an entero-anastomosis was also performed. I wish to emphasize the fact that after the resection it is necessary to keep to a certain diet for two or three months only, then the patient can eat any food, whereas after gastro-enterostomy careful dieting is always necessary (Moynihan).

Of 236 resections for duodenal ulcer which were performed from 1916 to 1923, 223 (94 per cent.) have been cured, 8 improved, and 5 not cured (2.1 per cent.). Among these 5 cases there are 2 recurrences of duodenal ulcer after operation by the Billroth I method, and one case of gastro-jejunal ulcer. This is the only case of gastro-jejunal ulcer among 292 resections. After a more extended stomach resection this patient has now been cured.

The permanent results with stomach resection for exclusion are not so good, as there have been 9 per cent. failures. As in cases of removal of the pylorus the permanent results are worse (53 per cent. of cures) than in the typical cases in which the excluded pylorus was left in (88 per cent. of cures), it is impossible that the excluded pylorus should be the cause of failure, as Haberer asserted. According to my experience the good permanent results depend on the size of the part of the stomach removed. In 1919 I resected only one-third of the dilated stomach, and in this way the failures can be explained. Through a more extensive stomach resection the patients could be cured.

It is very important to realize that almost as good permanent results can be achieved with the stomach resection for exclusion as with resection of the ulcer, if a sufficiently large part of the stomach is removed. The resection for exclusion is much easier and less dangerous than the resection of a penetrating duodenal ulcer, and it would be a great advantage if this method were performed instead of gastro-enterostomy. It cannot be expected that the results with gastro-enterostomy (which method is recommended by Haberer for such cases) will be better than those when gastro-enterostomy was used in every case. And at that time Haberer had only 37 per cent. good permanent results, while other surgeons (Müller, Payr) had from 50 to 70 per cent. I do not reject gastro-enterostomy altogether, but I reserve it for old patients without hyperacidity who are not in danger of getting gastro-jejunal ulcer.

My view that the extent of the resection and not the removal of the pylorus decides the permanent results seems to me to be proved by the following two cases.

Two brothers were operated on in 1919 for gastro-jejunal ulcers after gastro-enterostomies. I removed half of the dilated stomach with the pylorus and the old duodenal ulcer, and performed a Y-shaped anastomosis without giving relief; heartburn, haemorrhage, and severe pain continued, so that half a grain of morphine daily was required. In 1921 I operated again on both, and found big gastro-jejunal ulcers penetrating into the pancreas; after an extended resection of the stomach, leaving behind only one-fifth, a Y-shaped anastomosis was performed. Recovery followed and since that time the patients have remained well; they can eat anything, and have gained more than 30 lb. in weight during five years' observation.

The fact that in a dilated stomach scarcely more than the antrum is enlarged is very important, but not commonly known, and so it is not taken into consideration. Therefore after removal of two-thirds of a greatly dilated stomach there remains more than one-third of a normally sized stomach; this is the explanation of the recurrences. In a really extensive stomach resection the whole lesser curvature is removed.

In the radical operations for gastro-jejunal ulcer the immediate results are satisfactory—68 resections with 4 deaths—a mortality of 7.3 per cent. In order to get good permanent results it is necessary to make an extensive resection of the stomach and to avoid the Y-shaped

Where gastro-jejunostomy was performed *per se* the ideal opening, after due allowance had been made for normal contraction, should approximately equal the transverse diameter of the jejunum. It was a simple mechanical fact that the jejunum could not carry away more contents than its normal lumen when comfortably distended would admit. For the purpose of emptying the stomach the very large opening so frequently made was obviously unnecessary. The normal outlet of the stomach when the pylorus was fully dilated was exactly the size of the duodenum. It would seem reasonable to copy this principle. The farther they got away from Nature's standard the more likely they were to fall into error.

Sir WILLIAM DE COURCY WHEELER (Dublin) said that most surgeons would be guided in the management of gastric and duodenal lesions by judgement based on their own capabilities and the results of personal experience. He agreed with Mr. Herbert Paterson that no complicated surgery was justified in the case of duodenal ulcer. Perforation and haemorrhage had alone to be considered, and every ulcer, when possible, should be inverted or covered with a piece of omentum; when bleeding was part of the history, excision, cauterization, or the picking up and ligature of the vessels round the ulcerated area should be practised in addition to gastro-enterostomy. The speaker feared cancer following gastric ulcer, but in his experience the pendulum of surgical opinion had swung too much over in this direction; Mr. Herbert Paterson had, he thought, gone to the other extreme. He had had several cases come back years after gastro-enterostomy for ulcer with inoperable cancer. In his hands resection had given better results than excision, but resection was only necessary in a limited number of cases. Gastro-enterostomy was futile as a palliative operation and two-stage operations were seldom necessary. It was most important to empty the stomach before operation when resection was contemplated. Fatalities had occurred by regurgitation of fluid into the mouth during the application of the clamps when this elementary detail had been omitted. Judgement was the keynote to success, and he refused to be bound by those who insisted, on the one hand, that gastro-enterostomy was sufficient in all cases, or, on the other hand, by those who argued partial gastrectomy as a routine. The sleeve resection which he had advocated on a former occasion did not give as good ultimate results as might have been expected.

Dr. H. BRUCE (Toronto) said that gastro-jejunostomy was the most satisfactory operation. He feared the mortality that would take place if gastrectomy were performed by every surgeon.

Professor D. P. D. WILKIE (Edinburgh) pointed out that time was the surest test of the value of any method or procedure. The fact that after more than forty years the operation of gastro-enterostomy remained the recognized procedure for duodenal ulcer was the strongest proof of its worth as an operation. The problem resolved itself into two questions: first, did the operation give lasting relief or cure for either duodenal or gastric ulcer or for both in a large percentage of cases? and secondly, did it entail unfortunate sequels in any appreciable number of cases? He believed that this operation would remain the method of choice in all post-pyloric ulcers. It was seen at its best in cases of duodenal ulcer with some stenosis, and here they might anticipate 90 per cent. of satisfactory results. Where the duodenal ulcer was associated with a small hypertonic stomach and no stenosis the benefits of the operation were much less certain, and in this class of case medicine found its legitimate field. Where haemorrhage from a large posterior duodenal ulcer was the indication the results were still less certain, and permanent relief was not conferred in more than 60 per cent. of cases. Where there was an active florid gastric ulcer of the lesser curve gastro-enterostomy, although by no means useless, was insufficient for cure in too large a percentage of cases to be considered the operation of choice. The success of partial gastrectomy had given it a vogue which he felt sure would not outlast the test of time. Local excision of the ulcer, and the treatment by cautery combined with gastro-enterostomy, although less dramatic in their performance and in their immediate results, were, in his opinion, more logical operations. He did not wonder that a certain aftermath of poor results from gastro-jejunostomy occurred, considering the number of times this operation had been performed by all kinds of surgeons. Most of the bad results were unquestionably due to bad surgery. Either the case was unsuitable, the operation was indifferently performed, a coincident gastric ulcer was overlooked, the after-treatment was neglected, or infective foci were left untreated. Jejunal ulcer and bilious vomiting occurred occasionally in the practice of all surgeons. He believed that persistent hyperacidity was the deciding factor in the etiology of jejunal ulcer, and careful antacid treatment for some months after the operation was the surest safeguard against it. In all cases in which hyperacidity had been a feature prior to operation alkalis and belladonna should be given for some weeks thereafter. Where care in after-treatment was exercised, this complication would not appear in more than 2 per cent. of cases.

Post-operative vomiting of bile was almost always due to the opening in the mesocolon being too small. Where access through the mesocolon was restricted it was preferable to perform the anterior operation with a lateral anastomosis of the limbs of the loop, a procedure which, with some, had an undeservedly bad reputation. If the patient suffered from gastric flatulence with occasional bilious vomiting prior to operation, and no stenosis but rather a dilated duodenum was found, a duodeno-jejunostomy in addition to gastro-jejunostomy would ensure post-operative freedom from vomiting. Persistent bilious vomiting did not occur in more than 3 per cent. of cases, and in most of these could be cured by a second anastomotic operation. The operation of gastro-duodenostomy was on physiological grounds preferable to gastro-jejunostomy in cases of duodenal ulcer. In male subjects, however, it was usually difficult to perform, and, in his experience, whilst the ultimate results were excellent, the convalescence was less smooth and the immediate effects less striking.

Mr. HERBERT J. PATERSON, in reply, said that on the whole the results of gastro-jejunostomy were eminently satisfactory; the mortality rate need not be greater than 1 per cent. He asked whether, on the supposition that 5 per cent. of the failures after gastro-jejunostomy could be cured by partial gastrectomy (an assumption which he declined to admit), it was justifiable, having regard to the small number of failures, to submit the remaining 95 per cent. of their patients to such a severe operation as partial gastrectomy, with its necessarily greater mortality rate. Surely the wiser course was to perform gastro-jejunostomy in the first instance, and to reserve more severe procedures for cases in which the simpler operation had been tried and had failed?

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

STOVAINE IN OTO-RHINO-LARYNGOLOGY.

FOR about a year I have been testing stovaine as a local anaesthetic for operations on the nose, throat, and ear, in accordance with the request of the Cocaine Research Committee. On the whole it has proved very satisfactory indeed.

In fifty cases of cauterization with the electric wire anaesthesia with 5 per cent. stovaine was employed. The operation was quite painless; the drug produced less vaso-constriction than cocaine; there were practically no systemic effects and no toxic symptoms, and there were less after-effects than with cocaine, which gives a certain feeling of "cold" afterwards. For cauterization stovaine had all the good qualities of cocaine without the bad ones.

In fifteen turbinal operations 10 per cent. stovaine was employed. The operation was painless, but there was more bleeding than with cocaine, though this could be controlled by mixing with adrenaline. There were no toxic effects, but the patient was more apprehensive, cocaine tending to diminish the dread of the operation. Thus stovaine, though quite satisfactory for these cases, was less so than cocaine.

In ten septum operations 10 per cent. stovaine was used,

Mr. CHARLES ROBERTS (Manchester) said that his contribution to the discussion was based on the close observation and a follow-up of 157 operations of gastro-jejunostomy for ulcer, which he performed at the Manchester Royal Infirmary during the five years ending December, 1925. He believed that a true estimate of the role of gastro-jejunostomy in the treatment of ulcer could be most accurately formed by regular and prolonged observation of patients after operation. Posterior gastro-jejunostomy alone had been performed for duodenal and pyloric ulcers in the great majority of cases. For small gastric ulcers the operation had been combined with local excision of the ulcer when practicable. The appendix had been removed as a routine, focal sepsis dealt with, and the teeth carefully attended to. Printed general instructions, with special directions as to diet, had been given to all patients, and a powder containing magnesia ponderosa and the carbonates of bismuth and calcium had been prescribed for at least six months. Five patients had been readmitted for symptoms necessitating a further operation. In one of these, where the operation had been done for an irremovable ulcer, signs of malignancy were present. One case of duodenal ulcer was readmitted for recurring haemorrhage. In one case subacute intestinal obstruction followed anterior gastro-jejunostomy. In another the appendix had been left owing to difficulties with the anaesthesia, and appendicectomy was followed by a successful result. One patient (the only one he had been able to find) developed a gastro-jejunal ulcer. This man, who lived in a fried-fish shop, had disregarded all instructions as to after-treatment. Two patients refused readmission, and one patient with pyloric stenosis was operated upon again elsewhere. Nine, all of whom were cases of duodenal ulcer, had suffered from minor digestive disturbances, chiefly in the form of an inability to digest certain articles of diet. Instructions given for after-care had not been rigidly observed.

His observations led him to the following conclusions: Partial gastrectomy should be performed whenever practicable, for, apart from other reasons, malignancy might follow even if it was not already present. Local excision combined with gastro-jejunostomy was the most successful of all operations for ulcer. Anterior gastro-jejunostomy should be avoided whenever possible owing to its mechanical disadvantages. In the case of haemorrhage or the bleeding type of duodenal ulcer, a direct attack should be made on the ulcer itself. The appendix should be removed as a routine. Gastro-jejunal ulcer, recurrence of ulcer, formation of a fresh ulcer, and minor digestive disturbances could be almost entirely prevented if careful supervision and after-treatment were carried out. The speaker wished to emphasize that point because so little stress as a rule was laid upon the importance of after-treatment in surgical text-books and communications.

Gastro-jejunostomy was to be looked upon as an adjunct to medical treatment and not entirely curative. The operation itself was to be regarded, not as the final treatment, but the commencement of a more efficient treatment. Under these conditions the results were so satisfactory that any alternative procedure, more mutilating in character or involving a higher mortality risk, was unnecessary and unjustifiable, and should only be resorted to as a second-stage operation.

Mr. E. DEANESLY (Wolverhampton) said that the question debated was whether gastro-jejunostomy retained its position as the best means of treating gastric and duodenal ulcers. Mr. Paterson maintained emphatically that it did, while Professor Finsterer said that he rarely employed it and recommended various more radical operations. Mr. Deanesly agreed in the main with Mr. Paterson. It could not be denied that gastro-jejunostomy gave excellent results in a very large percentage of cases, and it was difficult to understand the extraordinary discrepancy in the percentage of favourable results recorded by different surgeons of acknowledged eminence and experience. It could not, however, be denied that every surgeon had a certain percentage of cases of duodenal ulcer which gastro-jejunostomy failed to cure, and very few surgeons now, with the exception of Mr. Sherren, regarded this operation by itself as a satisfactory treatment for gastric ulcers. With regard to the larger and more deeply penetrating ulcers of the duodenum, especially those in which serious haemorrhage had occurred, and also those ulcers in which an active ulceration was accompanied with marked stenosis, gastro-jejunostomy did not give good permanent results. For the last few years he had been treating such cases more and more frequently by Finney's gastro-duodenostomy, which was really a pyloroplasty, and he had had most encouraging results. This operation had the advantage of removing both pyloric stenosis and pyloric spasm. In smaller duodenal ulcers he had even contented himself with a simple Rammstedt's operation on the pyloric sphincter. Most text-books spoke rather disparagingly of Finney's operation or exaggerated its difficulties, which were really no greater than a gastro-jejunostomy in most cases, and he had heard that Finney himself rarely practised the operation now. However that might be, it seemed to him that it had such obvious advantages in placing the ulcer at rest and in preventing the holding up of food in the stomach, with resulting increase in acidity, that he thought more surgeons should give an extended trial to this method before resorting to such a drastic and difficult procedure as resection of the duodenum.

Mr. A. B. MITCHELL (Belfast) agreed with Mr. Paterson that gastro-jejunostomy held the field in the treatment of duodenal ulcer. The ulcer, however, should at the same time be infolded or excised. If a severe haemorrhage had occurred the ulcer would almost always be found on the posterior surface or pancreatic border of the duodenum. In such cases he made it a rule to ligature the duodenal branch of the pancreato-duodenal artery. At the Annual Meeting in Belfast in 1909 he had advocated the performance of gastro-jejunostomy in the treatment of duodenal perforation, but met with no support. It had been the routine practice in his clinic since that time, except where shock was profound and very rapid work was essential. He was very pleased to hear Mr. Paterson advocate it so strongly. Initial shock on perforation depended on the character and amount of extravasation. In duodenal perforation the extravasated material was aseptic and small in amount, because the moment the perforation occurred the pyloric sphincter suddenly contracted and remained contracted till it was wearied out or some indiscreet person put it to sleep by morphine. In either case a further leakage occurred. In gastric perforation the case was different and leakage was continuous. If the stomach was dilated and the perforation large, the peritoneum was rapidly drenched with material which might be highly toxic and cause the most profound shock. Such patients could bear very little handling. "Get in quickly and get out quicker" must be their rule. Apart from this, in gastric perforation he thought the question of gastro-jejunostomy should always be considered after the perforation had been closed. As regards the treatment of chronic gastric ulcer, gastro-jejunostomy, with or without partial gastrectomy, was now the recognized procedure. It was generally accepted that excision of the ulcer or infolding the ulcer would rarely in itself result in cure. It was also agreed that gastro-jejunostomy alone was not sufficient—the ulcer itself must be dealt with. Mr. Mitchell confessed to a great hesitation in resecting a large portion of healthy stomach for the cure of a small simple ulcer, say the size of a sixpence, high up on the lesser curve in a young patient. These ulcers might be treated by infolding—the through-and-through stitch around the ulcer being drawn so tight that the blood supply was cut off. It would then undergo necrosis and digestion. Leakage was prevented by a Lembert suture. A gastro-jejunostomy was then performed at the upper level of the pyloric segment. He could not follow Mr. Sherren in anastomosing the jejunum above the ulcer at the fundus of the stomach. Where the ulcer was in the lower segment or where it was adherent to the pancreas or liver it must be freely separated. The question of partial gastrectomy by the method of Polya would then arise. It was the operation of choice unless the damage to the stomach was very slight. He agreed that the mortality was very low and convalescence rapid. It was, however, too soon to say whether this operation was free from such sequelae as peptic ulcer.

printed for the first time; they contain many curious medical items, some of which may anticipate later observations: in the Minutes of May 13th, 1684, there is a record of a thermometer three inches long "which serves to show ye duration, increase, and Diminution of feavors"; the present short clinical thermometer, it may be recalled, was introduced by the late Sir Clifford Allbutt in 1867. The following memorandum occurs on a page headed "Cases of Appendicitis," a disease so named in 1886 by R. Fitz of Boston, Mass.: "The Society was informed by Mr. Musgrave that in the dissections of two persons, who died not many yeares since in Oxford of Consumptions, the Intestinum Coecum had these things remarkable in it; in one of them it was quite dried up, and grew fast to the peritoneum: in the other it was much leese, than usually it is." Possibly the first was the result of past appendicitis. The first case of acute appendicitis unearthed by Kelly and Hurdon was in France by Mesliver in 1759, and was associated with a pin in the appendix; while the first case reported in this country has previously been considered to be that recorded by James Parkinson (of Parkinson's disease) in 1812. Dr. R. Plot of Magdalen Hall, of whom there is a very charming portrait, was a regular attendant at the Philosophical Society, and in 1685 described a case which arouses a suspicion of acromegaly, though this is not suggested by the editor.

These volumes are an inexhaustible mine of information, and our gratitude to Dr. Gunther for revealing them in such a pleasant form is sincere.

MASSAGE AND THERAPEUTIC EXERCISES.

DR. KIRCHBERG, reader in massage and curative exercises in the University of Berlin, has issued the first volume of a manual[2] on these subjects, together with a supplementary volume on their relationship to physical or beauty culture.[3] In this first volume the history, technique, and effects of massage and manipulative and health exercises are discussed and described. The second volume will deal with these subjects in their application to the different organs and systems of the body, and will include chapters by gynaecological, surgical, ear, nose, and throat specialists and others. The fundamental principle, which the author insists upon throughout, is that a qualified medical practitioner should advise and control the work of masseurs, masseuses, surgical manipulators, and physical instructors generally. Different types of physical development demand different forms of exercises, and different diseases different forms of massage and manipulative treatment. The connexion, therefore, between the doctor and those who practise these arts must be close, if injurious results are to be avoided and quackery checked. Dr. Kirchberg even goes further and considers that the doctor should also be consulted in the use of massage and physical exercises for the preservation of beauty; as he very truly remarks, good looks depend chiefly on good health. From his point of view massage and physical exercises are simply instruments in the armamentarium of the surgeon and physician.

In the opening section of the first volume a concise account is given of the practice of massage in ancient times, in China, Greece, and Rome; and in the early and late Middle Ages. A special account follows of the influence of Ling, who flourished between 1776 and 1839 and who is regarded as the father of modern therapeutic exercises and the originator of the Swedish school that has spread its influence throughout Europe. The development of massage and physical training in Prussia and Germany since 1840 is described, together with a general history of the literature and progress of the subject during the past century.

The section on technique contains a detailed and illustrated description of the different procedures in massage, and the manipulative and physical exercises applicable to the movements of limbs, joints, and muscles, together with numerous practical details of clothing and the position of masseurs and patients, the temperature, equipment and lighting of massage rooms, duration of the manipulations, and so on. The final section deals with the effects of massage and exercises on the body generally and on the different organs and systems; and concludes with a bibliography of general history and of works on the technique and effects of massage and therapeutic exercises.

The greater part of the supplementary volume is taken up with the physical culture of children and schoolgirls, and with face massage, but its final chapter on the preservation of good looks in advancing years is of much interest. The author impresses on us the advantage of continuing, after retiring from business or official life, some occupation or other, preferably in the open air; and not giving way to habits of inactivity and indolence. There is no reason why older men should not do gymnastic exercises. He recommends golf as a sport, and notes that there are golf courses now at most health and seaside resorts. There is also much good advice to women in this chapter and in the pages of the volume generally. Women are warned against painting their faces, which only makes them repulsive to sensible men. But in condemning the modern fashion of cropping the hair as likely to cause baldness, and of shaving the armpits as hygienically and physiologically objectionable, the author will find many dissentients. His views, however, on exercises and sports in the physical culture of women are sound and in accordance with present-day teaching. He approves of light clothing and short skirts, but considers that much of their value physically is lost by the wearing of high-heeled shoes. We can recommend both the manual and its supplement, not only to the medical profession, but to all who are interested in the subjects with which they deal.

[2] *Handbuch der Massage und Heilgymnastik.* By Dr. Franz Kirchberg. Leipzig: Georg Thieme. 1926. (Sup. roy. 8vo, pp. viii + 279; 71 figures, 19 plates. M.14.40, bound M.16.50.)

[3] *Massage und Gymnastik im Dienste der Kosmetik.* By the same author and publisher. (Post 8vo, pp. v + 99; 26 figures. M.3.90.)

THE LUMBAR REGION AND PELVIS.

THE publication of the third volume of Professor GRÉGOIRE'S treatise on the medical and surgical anatomy of the abdomen[4] brings the work to a completion. The regional classification adopted may to some appear somewhat arbitrary, but is amply justified in the course of the author's exposition. Volume I, the second edition of which was published in 1922, dealt with the thoraco-abdominal region; Volume II, which appeared in the same year and was reviewed by us in 1923 (vol. i, p. 975), dealt with the subthoracic region of the abdomen, and the present is concerned with the lumbar region and pelvis. In expounding the subject the author first describes, as regards the lumbar region, its external form, then the structure of its wall—skeletal, fibrous, muscular, and tendinous—and its vessels and nerves. Then follows a chapter on the weak spots of the wall—the lumbar groove bounding the mass of the erector spinae muscle externally, Grynfelt's space situated at the upper end of that groove, and the triangle of Petit. Next the compartments of the region are described—an upper or thoracic and a lower or renal compartment; and a section is added, discussing the best routes of surgical access in the lumbar region. A detailed description of the kidney and suprarenal gland, their relations, fixation, and vessels, and of the urinary excretory channels, completes this portion of the work. The account of the pelvis is on similar lines, but of greater length corresponding to the greater complexity of the subject; it includes matters of special interest, such as the sacro-iliac articulation and its mechanical principles, the floor of the pelvis and the sphincter apparatus of the lower outlet, the statical relations of the uterus, and the fixation and relations of the prostate.

A mere summary of the contents of the volume, however, gives but a very imperfect conception of its merits. One very obvious feature is that the work is first hand and original from beginning to end, and after its perusal we have no difficulty in accepting the author's statement that he has written of what he has seen and expounded the facts according to his own comprehension of them. The book reads as if the author were handling the parts as he

[4] *Anatomie Médico-Chirurgicale de l'Abdomen.* III: *La Région Lombaire de l'Abdomen et le Petit Bassin.* Par Raymond Grégoire. Paris: J. B. Baillière et Fils. 1926. (Roy. 8vo, pp. 304; 85 figures, 81 plates. 2 dollars.)

mixed with 1 in 2,000 adrenaline. The mucous membrane anaesthesia was equal to that produced by cocaine, but the deeper bone was more painful. There was more bleeding, but no toxic effects. The "buck-up" effect of cocaine was greatly missed. Stovaine was thus not so satisfactory as cocaine for this major operation on the nose. In operations for nasal polypi and ethmoiditis the effects were just the same as in the septum operation.

Generally, with regard to stovaine anaesthesia in the nose my experience has been that it is perfectly safe and the surface anaesthesia is excellent; it is perhaps better than cocaine for purely mucous membrane work; the anaesthesia is slower and the vaso-constriction less; but it is on the whole not so satisfactory as cocaine for the major operations.

Twenty operations about the mouth and throat were performed under 1 per cent. stovaine. It seemed perfectly safe, there were no toxic effects, and the anaesthesia was good. There was very little vaso-constriction. For these cases it is much preferable to the injection of cocaine; but I do not think it is preferable to novocain, though little if any behind it.

In twelve cases the tonsils were removed under 1 per cent. stovaine. The anaesthesia was good, but there was much more bleeding than with novocain, and it was therefore not so satisfactory for this operation.

As a laryngeal spray for performing minor operations I used a 5 per cent. solution of stovaine, with excellent result in the three cases—one a papilloma and two foreign bodies.

On the whole, therefore, I consider that stovaine should have as big a place in the world of local anaesthetics as cocaine and novocain, more especially in minor throat and nose operations.

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THE EPILEPSIES.

Is epilepsy ever really idiopathic? This is a question which has been lurking in a nebulous state in my mind for years past. Recently I have had two cases bearing on this, where the apparently idiopathic condition has proved to be really secondary to a local irritation or lesion.

CASE I.

A young lady, aged 18, had had for two years bad attacks of twitching of the left side of the mouth and nose and indistinct exhausted sensations at irregular intervals, almost always after reading for a long time. Expert investigation of eyes and antrum gave negative results. The antrum was investigated, as I had detected signs of pain on pressure of the second left upper bicuspid. A skiagram of the upper jaw showed a thickening of the root of this tooth. On extraction it was found to have a slight exostosis, and there was some chronic inflammation of the periosteum and pulp. The tooth was extracted over twelve months ago, and there has been no recurrence of the attacks; the patient is healthy in every way.

CASE II.

A married woman, aged about 46, with one grown-up daughter, two years ago had a severe and prolonged attack of multiple peripheral neuritis, beginning with symptoms simulating acute bulbar paralysis. She is abstemious and a careful liver in every way. The paralytic symptoms gradually disappeared under treatment. The main active drugs given were an alkaline mixture containing potassium iodide and bromide, with a little free iodine (iodide, iodate, and free iodine were formed in the stomach). There were no signs, stigmata, or any suspicion of specific disease. The daughter is perfectly healthy and normal, and above the average in mental development. Since this patient lost the symptoms of peripheral neuritis she has had frequent attacks of what appears to be typical petit mal, and once I had an opportunity of seeing her in a typical grand mal fit. She always has an aura, referred to the epigastrium, just preceding the fit. She is not unconscious in these fits, but in a sort of semi-delirious state (except in the one grand mal attack).

These two cases give me my peg on which to hang my question—Is epilepsy ever *really* idiopathic?

Flackwell Heath, Bucks. G. D. PARKER.

Reviews.

EARLY SCIENCE IN OXFORD.

OXFORD is fortunate indeed in the ability and enthusiasm of Dr. R. T. GUNTHER, Fellow of Magdalen College, whose *Early Science in Oxford*[1] forms a valuable and generously illustrated record of the great men of the past. The first instalment, on chemistry, was reviewed in our columns five years ago (1921, ii, 708), and we were then warned that the issue of the remaining parts must await a longer list of subscribers. Fortunately this appears to have been effected, for last year Volumes III and IV appeared, "printed for the subscribers," and now a further volume, *Early Medical and Biological Science*, extracted from *Early Science in Oxford*, has been brought out without plates at the request of friends, who have expressed regret that the cost of the complete work puts it beyond the reach of a large number of students for whom it was written. This additional volume, which reproduces the earlier pages of Volume III, deals first with medicine in two chapters (early and in the seventeenth century and after), and then with anatomy, physiology, zoology, and geology; although it does not contain the beautiful plates of the original, it is illustrated by 47 figures, several of them occupying the whole page, and is of special interest to students of medical history.

The original statutes of the University (*circa* 1325) accorded an honourable status to physic and reckoned those skilled in medicine as more learned than others, since they are entrusted with the "cure of the sick, the perils of death, and the ordering of life," and it is therefore directed that great care must be exercised that only competent persons be allowed to practise or incept in that faculty. The first known lecturer on medicine at Oxford was Nicholas Tynchewyke or Tingewick (*obiit* 1324), who is not noticed in the *Dictionary of National Biography*, but cured Edward I of his illnesses; it is also recorded that he rode forty miles to see an old woman who cured jaundice by administering the lice of sheep bruised and compounded with honey and water (hydromel), and gave her a sum of money for instructing him in the cure. It is interesting to learn that John of Gaddesden prophetically gave urea as a diuretic some centuries before its usually recognized discovery. The debt of medicine to Robert Boyle, which is perhaps hardly recognized to its full extent, is shown to crop up in unexpected directions, such as his advocacy of simple remedies instead of elaborate mixtures and the invention of the ammoniated quinine which so many patients who have suffered from influenza have cause to remember. There is much about blood transfusion at Oxford in the time of Lower, and, as is usual in these volumes, the reader finds new data. In the first half of the nineteenth century medicine was in a state of suspended animation, and in spite of a latitude in the choice of subjects, ranging from the botany of Virgil to a knowledge of volcanoes, allowed to candidates for the D.M. degree, there were not forty men on the books of all the colleges who had the right to put B.M. or D.M. after their names. The history of the Ashmolean Museum, which is finely represented in the frontispiece to the fourth volume, is set out in Volume III; its contents were given to the University by Elias Ashmole, "Mercuriophilus," who in turn had received its rarities from John Tradescant, junior (1608-62), though not without much trouble with his widow.

Volume IV is appropriately introduced by the Vice-Chancellor, who is also the Warden of Wadham, in a few words on the early association of his college with the Royal Society which grew out of the Philosophical Society of Oxford, the subject of this attractive volume. The Minutes of the Oxford Society for 1683 to 1690, reproduced from the manuscript in the Ashmolean Museum, are here

[1] *Early Science in Oxford*, vol. iii, Part I, *The Biological Sciences*; Part II, *The Biological Collections*. (Demy 8vo, pp. xii+564; 64 plates, 72 figures); vol. iv, *The Philosophical Society*. (Demy 8vo, pp. viii+259; 4 illustrations.) By R. T. Gunther. Oxford: Printed for the Subscribers. 1925. *Early Medical and Biological Science* extracted from *Early Science in Oxford*. By R. T. Gunther, M.A., LL.D., F.L.S. London: Humphrey Milford, Oxford University Press. 1926. (Demy 8vo, pp. 246; 47 figures. 7s. 6d. net.)

NOTES ON BOOKS.

SINCE Dr. Budin established in Paris in 1892 the first infant welfare centre, there has been so rapid a multiplication of such places in this country that it is almost certain every medical practitioner must have come into contact with them either directly or indirectly. That everyone understands the purpose of these centres and their correct management is not equally certain. To inform those who have not this knowledge, and to assist those who are embarking upon this work for the first time, Dr. CHODAK GREGORY has written a little book entitled *Infant Welfare*.[9] The first chapter is devoted to the management of a welfare centre, with a brief reference to the Acts dealing with this subject. The second chapter deals with the general management of the child, and the kind of advice which should be given to the mothers in order to prevent ailments and disorders. A few discriminating remarks are given on the use of the "comforter." Dr. Gregory's championship of its wisely restricted use will probably provoke discussion. Doctors who have an intimate personal knowledge of infants, and have given thoughtful observation to this much abused object, will doubtless support the author. Chapters III and IV are résumés of modern methods of breast-feeding and artificial feeding. The other chapters are devoted to a brief consideration of food, stools, vomiting, prematurity, rickets, rashes, and pyrexia. The final chapter gives a short account of the infant mortality rate in this country. The author states in her introduction that the "welfare doctor" is there to prevent disease and not to cure it, but her book can nevertheless not escape the criticism that much space is devoted to treatment. The real function of such a doctor should be to prevent illness by education of the mothers, and when any departure from the normal occurs in the infants they should be referred to a pediatrist for treatment.

The first edition of Professor CHRISTIANSEN'S book on cerebral tumours[10] was reviewed in these columns some three years ago. A second edition has now appeared in which, while the general form has been retained, the text has been emended and brought up to date. As a contribution to clinical neurology we have nothing but praise for this book. The subject is throughout presented in a style that is vivid, easy to read, and abounding in graphic clinical descriptions. The reader will find much fresh material in the chapter dealing with tumours in the region of the optic chiasma. A new and valuable chapter also is that on uncertain diagnosis. We find no mention of the modern method of diagnosis by ventriculography, an omission which some will perhaps approve. The book really consists of a series of clinical lectures, where the varieties of tumours are described and discussed according to their topographical distribution in the brain. It may be read with advantage by neurologists and students alike.

The second edition[11] of *Ear, Nose, and Throat Nursing*, by Dr. HARDIE NEIL, has been revised and considerably enlarged, and thus rendered more useful to hospital medical officers who are concerned with lecturing to nurses, and also to general practitioners. This book is well illustrated, and should be popular.

In a small book entitled *Electrothermic Methods (Desiccation and Coagulation) in the Treatment of Neoplastic Diseases*,[12] Dr. J. D. MORGAN gives a short account of electrothermic procedures, including the methods of producing desiccation and coagulation. With the aid of numerous illustrations he describes the types of apparatus employed and the various indications for these forms of treatment. The book is written from the practical standpoint, and gives a simple description of a form of treatment which has received a good deal of attention during the last few years.

Were it not that Mr. GEORGE POPOFF states explicitly that his book is not an anti-Bolshevist pamphlet, it might well be thought that his "murky and horrible" descriptions in *The Tcheka*[13] were propagandist. To anyone in Western Europe it must seem incredible that a body such as the Russian political secret police should exist in a country which claims to have established a higher system of government than the world has ever known. According to Mr. Popoff, the Tcheka is a State within a State; so that the Government in the Kremlin with which Europe has relations is overshadowed by the Government in the Lubjanka, which is making illusory all agreements with the Soviets. The frontispiece to the volume is a portrait of the head of this organization, Dshershinsky, who has since died in circumstances which are thought, even in Russia, to call for explanation; it is an unpleasant, crafty face, although Mr. Popoff describes it as ordinary and almost good-natured. Against this person the comparative moderation of Tchitcherin, Lunatcharsky, and Radek were apparently of no avail; consequently a system of terror, the author says, goes on within the Lubjanka, where interrogatories are carried on by weird savages and boors, while more cunning traps are set for prisoners by a smooth-tongued ruffian Artusoff. The interrogatories not infrequently end at the hands of one of the guild of executioners, which is apparently a very well paid body in this Communist country, Russia. The only excuses that Mr. Popoff can make for this outrageous state of affairs are that such actions are natural to the Asiatic Tartar, and that the Tcheka is simply an inheritance of the Ochrana, or secret police of the tsars. Mr. Popoff anticipates an emphatic denial of the truth of this book from Moscow, where "the great Asiatic art of lying is admirably understood." Certainly the story takes one's breath away. Its truth can never be settled until this land of a new heaven and earth opens its doors to strangers and allows free intercourse with its neighbours.

[9] *Infant Welfare*. By H. H. Chodak Gregory, M.D., M.R.C.P. London: H. K. Lewis and Co., Ltd. 1926. (Cr. 8vo, pp. xi + 142. 4s. 6d. net.)

[10] *Les Tumeurs du Cerveau*. Par Pr. Viggo Christiansen, avec une préface du Pr. Pierre Marie. Deuxième edition. Paris: Masson et Cie. 1925. (Roy. 8vo, pp. x + 399; 107 figures. 45 fr.)

[11] *Ear, Nose, and Throat Nursing*. By James Hardie Neil, D.S.O., C. de G., M.B.New Zealand, M.R.C.S.Eng., F.A.C.S. Second edition. Auckland: Clark and Matheson, Ltd., London: H. K. Lewis and Co., Ltd. 1926. (Extra post 8vo, pp. 106; 20 figures on 13 plates. 7s. 6d. net.)

[12] *Electrothermic Methods (Desiccation and Coagulation) in the Treatment of Neoplastic Diseases*. By J. Douglas Morgan, B.A., M.D. Philadelphia: F. A. Davis Company. 1926. (5½ × 7½, pp. 172; 36 figures. 2.50 dollars net.)

[13] *The Tcheka*. By George Popoff. London: A. M. Philpot, Ltd. 1925. (Demy 8vo, pp. 308; 1 plate. 8s. 6d. net.)

PREPARATIONS AND APPLIANCES.

A Tonsil Snare.

MR. D. MALLAM (Redhill) writes: Messrs. Mayer and Phelps have recently made for me a tonsil snare which combines the haemostatic advantages of Beck's instrument with the leverage and ease of application of Heath's guillotine. It is sturdy and all parts are open to inspection, making it easy to clean. It is simple in action and devoid of complicated mechanism. The end pieces are similar to those used in Beck's instrument, may be of any

sized aperture, and are readily attached at F. After engaging the tonsil within the aperture the wire loop is tightened by approximation of the finger ring A to the handle B until the pedicle of the tonsil is tightly gripped. The revolving nut C is spun up into position against the body of the instrument D by means of its arms. The wire loop is then gradually tightened further by slowly turning up the nut C until the tonsil is separated.

A Combined Skioptometer and Phorometer.

Lieut.-Colonel E. A. R. Newman, I.M.S.(ret.), who is ophthalmic surgeon to the Stamford Infirmary, sends a note on an automatic skioptometer which he has found very convenient and expeditious in use. The apparatus has been designed and made by Messrs. Clement Clarke of 16, Wigmore Street, W.1.

An endless chain of forty spherical convex and concave lenses is mounted on a vertical triangular frame, made of aluminium. The lenses are rotated through the sight holes by a milled wheel attached to an extensible rod. An indicator below the sight hole shows the power of the lens in use, and powers above five diopters are obtained by mounting an additional lens on a stud attached to the frame. At the suggestion of Colonel Newman Mr. Clarke devised means whereby the apparatus can be used as a phorometer. Twelve concave cylinders are mounted in a metal disc suspended in a bracket, which can be swung into position and clipped firmly against the sight hole. A fixed pointer shows the orientation of the axes of the cylinders on a scale engraved on the milled wheel which revolves the disc. The exact setting of the axis of the cylinder enables the measure of correction of the vision to be quickly arrived at, and any combination of sphericals with an astigmatic error of not more than 3 D., or any degree of astigmatism with a maximum or minimum error of 5 D. in hypermetropia and myopia respectively can be provided for. For refractive errors of a higher degree an additional spherical lens can be held in front of the apparatus.

In Colonel Newman's opinion the instrument, which is a product of British brains and workmanship, compares most favourably with far more expensive phorometers of foreign manufacture.

Differentiation of Bacteria.

Messrs. Burroughs Wellcome and Co. (Snow Hill Buildings, E.C.1) ask us to inform medical bacteriologists that they are in a position to supply sodium salts of the following organic acids: *d*-tartaric, *l*-tartaric, *meso*-tartaric, citric, fumaric, and mucic, now used in the differentiation of bacterial types in which "sugar reactions" are untrustworthy or fail.

wrote, and this gives great freshness to the description as compared with those textbooks which consist largely of excerpts from other writers. Again, the author possesses the gift of verbal delineation in an unusual degree, and this, added to the natural clarity of the French language, renders his book eminently readable. It cannot be said that the majority of books on descriptive anatomy lend themselves readily to continuous reading; as works of reference on special points or even taken in limited sections they are acceptable, but their continuous perusal involves exertion. Professor Grégoire, on the other hand, blends his facts with great skill, so that his descriptions almost assume the form of pure narrative. Among the original observations contained in the volume some do not appear to differ essentially from the teaching adopted in this country. Thus the excellent account given of the mechanics of the sacro-iliac joint is stated to differ from the accepted classical description, although it appears to agree in essential particulars with that of the best English writers on anatomy. On certain points, however, a discrepancy is manifest. Thus in dealing with the perineum the author refers to the current teaching that the triangular ligament forms part of the anterior wall of the pelvis, much in the same way as the obturator membrane helps to form its lateral wall. This, he points out, cannot be true of the female pelvis, for in it the hinder part of the so-called triangular ligament is deficient in the middle line and does not pass across from one limb of the osseous subpubic arch to the other behind the vagina, as is figured in some of our leading English textbooks, but terminates on each side at the posterior extremity of the bulb of the vestibule to which it is attached. Were the hinder part of the ligament continuous across the bony arch, the vagina would pass through a rigid and inextensible fibrous membrane. Professor Grégoire describes each bulb in the female as being connected with the ischiopubic ramus of its own side by a suspensory ligament, and says that this arrangement is modified in the male by the two ligaments coming together and fusing in the middle line of the perineum. The book contains numerous full-page illustrations, almost all of them original and serving admirably to explain the more complicated relations.

Professor Grégoire is to be congratulated on the completion of a fine work.

OBESITY.

IT is some years since a work solely devoted to the subject of *Obesity*[5] has appeared, at any rate in this country, so that Dr. LEONARD WILLIAMS is able to present the subject with the new knowledge now available about the endocrine glands. Etiologically he divides obesity, which he has no hesitation in stigmatizing as an unnatural condition inimical to bodily health and mental efficiency, into the alimentary, in which connexion he preaches the dogma of temperance in eating with much force and many apposite illustrations, and the endocrine, of which the historical cases of Napoleon and Daniel Lambert are held to be examples. There are five chapters and the same number of short appendixes, the latter giving weight tables and diets. Some of the chapter headings are sprightly—for example, the "Bantlings of Obesity," in which the early stage of the condition is discussed, and "Eve," which is concerned with the fat members of the female sex. In the last chapter, entitled "Counterchecks" on treatment, dietetic restrictions, including fasting, though not going all the way with Guelpa's purgative methods, are outlined with a firm but light hand. "Unfired" or uncooked foods are regarded as essential, even in almost all forms of endocrine obesity, for it has been said that the vitamins are to the endocrines what the endocrines are to the economy as a whole. In describing the case of Mr. Banting, who in 1862, on consulting a Mr. William Harvey for deafness, was shrewdly diagnosed as owing this to his obesity, and accordingly was treated by diet with benefit for both affections, Dr. Leonard Williams praises the insight of the otherwise unknown adviser. The tradition that a rapid loss of weight is inadvisable is treated with scant respect, but the thyroid treatment is carefully discussed, and small doses recommended initially; the combinations of thyroid with parathyroid and pituitrin receive attention.

As the commonest form of obesity is brought about by an excess of alimentary intake over muscular output, increasing the amount of exercise would appear to be a remedy; but it does not always succeed in arresting the corpulence—indeed, some patients, it is said, do better when kept in bed until, by dietetic means, the habit of storing up food in the form of fat has been overcome. General physical exercise, it is thought, should be advised to the obese only with great care, as it may cause considerable strain on the heart, lungs, and excretory organs. Raising the body temperature reduces obesity, and it is in this way that thyroid extract is held to act; whereas iron acts indirectly by increasing the oxygenating properties of the red corpuscles.

[5] *Obesity.* By Leonard Williams, M.D. Oxford Medical Publications, Humphrey Milford, Oxford University Press. 1926. (Demy 8vo, pp. ix +171; 26 figures. 10s 6d.)

HANDBOOK OF DISEASES OF WOMEN.

THE appearance of an eighth edition of *The Diseases of Women*,[6] by BLAND-SUTTON and GILES, is a gratifying indication of the continued popularity of what is by now becoming an old book.

The first edition was published in 1897; thirty years or thereabouts is a long span of life for a medical textbook, and is proof of the vital excellencies of the work. In this edition little alteration has been made, and, as we reviewed the previous edition somewhat fully, little need now be said. The authors have thought it advisable to introduce two new chapters, dealing with radio-therapy, and with the physiology and therapeutics of the endocrine glands in their relation to gynaecology. The former is a useful synopsis of the opinions of various experienced clinicians, including the authors, but the latter is a brief review of an exceedingly complex subject, which on that account is perhaps not quite up to the level of the rest of the book. Considerable space has been devoted to myomectomy for fibroids, which the authors think is a mode of operation which is liable to be overlooked. As to this there is room for differences of opinion, but it is needless to say that the description of the operation is as satisfactory as the rest of the operative section of this well known textbook.

AMPUTATION.

DR. ORR of Kansas has produced a monograph[7] which should be useful to those surgeons who, without much experience, contemplate the performance of an amputation, but he has hardly attained the ambition of his title. The methods described are modern in the sense of being in present use but not in the sense of being new. Most of them have stood the test of time. A chapter is devoted to Vanghetti's cineplastic method, but the author evidently has but little personal experience of it. In this country it has been practically abandoned after a fair trial, like some other methods which were vaunted during the great war, but which he does not mention. The only osteoplastic amputation described is the Stokes-Gritti, a proceeding which to many surgeons familiar with thigh stumps does not seem to be justified by any advantages over an ordinary amputation.

The illustrations are numerous and clear. This book may answer a demand for such a work in America, but in this country the practical handbook[8] of MARTIN HUGGINS will probably, and justly, be preferred, as although it is not a textbook on amputation it deals with practical results and indirectly points out the best methods of operation. Dr. Orr acknowledges his debt to this work among others.

[6] *The Diseases of Women: A Handbook for Students and Practitioners.* By Sir John Bland-Sutton, Bt., F.R.C.S.Eng., LL.D., and Arthur E. Giles, M.D., B.Sc.Lond., F.R.C.S.Edin. Eighth edition. London: W. Heinemann (Medical Books), Ltd. 1926. (Demy 8vo, pp. xv + 595; 152 figures. 15s. net.)

[7] *Modern Methods of Amputation.* By Thomas G. Orr, A.B., M.D., F.A.C.S. London: H. Kimpton. 1926. (Roy. 8vo, pp. 117; 104 figures. 16s. net.)

[8] *Amputation Stumps: Their Care and After-treatment.* By G. Martin Huggins. Oxford War Primers. London: H. Frowde and Hodder and Stoughton. 1918. (7s. 6d. net.) Reviewed in the BRITISH MEDICAL JOURNAL, July 6th, 1918, p. 11.

INTERNATIONAL HEALTH.

EXPANDING ACTIVITIES OF THE LEAGUE OF NATIONS.

[FROM OUR CORRESPONDENT AT GENEVA.]

SOME interesting discussions took place last week in the Third Committee of the League of Nations Assembly—the committee which, under the chairmanship of Mr. Desmond Fitzgerald, of the Irish Free State, is charged with the consideration of the health and other technical organizations of the League.

The first contribution of a German delegate was by Baron von Rheinbaben, a member of the Reichstag, who said that Germany, like other countries, recognized the importance of international health organization. German co-operation in this field had begun directly after the war, and had not awaited Germany's entrance into the League of Nations. Germany, now a member of the League, would naturally be all the more ready to place her great experience in medical and pharmacological matters at the League's disposal. German medical officers had already participated in health expeditions under the League's auspices. At present an international committee was studying the sanitary conditions in German ports, and at the same time a German was co-operating with British, French, Belgian, and Portuguese experts on the sleeping sickness commission now in Uganda. Various proposals mooted for the extension of the health work had Germany's full sympathy, especially a proposal that the League should take physical education and school hygiene within its province, and he reminded the Committee that Germany had a non-official organization, called the "high school for physical culture," which existed to promote athletics, and it was due to this organization that Germany had gained its recent prowess in the playing field.

Physical Culture and School Hygiene.

The suggestion that the League Council should consider the question of physical education and school hygiene was made by the Czecho-Slovakian delegate, Dr. Veverka, who said that his country possessed one of the most powerful organizations for physical culture in the shape of the Sokols, a civil association which works in conjunction with the army authorities for the physical welfare of the troops. The Sokols have one million adherents in Czecho-Slovakia and carry out a vast programme of physical culture. The proposal to ask the Council to consider the importance of physical culture as a means of preventing disease was supported by the delegates for Austria and for Japan, the latter gentleman referring to the great strides which had been made in school hygiene in his country during recent years. On the other hand, one of the Canadian delegates, the Hon. Philippe Roy, who is a medical man, while recognizing the benefits accruing from the physical instruction of youth, did not think this work to be of a sufficiently international character to warrant an appropriation of money by the League. It was decided to refer the proposal to the permanent Health Committee for consideration, together with certain other proposals, one by the Uruguayan delegation, calling for a study of nutritional problems in relation to race improvement, and another by the Cuban delegation, to make an international investigation of the problems of eugenics in a wider sense than the question of infant mortality and the protection of children, into which the Health Committee is already inquiring.

Epidemiological Intelligence.

A good deal of discussion centred round the newly formed bureau for epidemiological intelligence at Singapore, which is the first extension of the League's activities in the Far East. Each week telegraphic information regarding the health conditions in upwards of eighty parts of Asia, Australasia, and the east coast of Africa is collected and disseminated, telegraphically to Eastern health administrations, and by post from Geneva to Western. The Japanese delegate pointed out that the Singapore bureau was supported for a limited time by the Rockefeller Foundation; when these allocations ceased he hoped that the League would assume the entire burden. An Indian delegate also spoke of the extreme usefulness of the bureau, and several other speakers urged its importance, not only as a centre of information, but as earnest of the League's interest in Far Eastern conditions. The proposal that provision for the expenses of the bureau should be made in the budget of the League was accepted, subject to the additional credits not bringing the budget of the health section above the maximum at which it was stabilized last year. The last Assembly voted 988,000 Swiss francs (nearly £40,000) as the budgetary maximum for health services, but as the entry of Germany brings to the League another important national contribution, it was agreed that a further credit of 25,000 francs might be inserted in the budget without transgressing the spirit of last year's resolution.

Malaria Commission.

Dr. Lutrario of Italy spoke of the value of the malaria commission which had been studying the incidence of the disease and the measures taken in various countries for its control. A travelling commission had studied the preventive measures taken and the importance of regional and local conditions. This work, he said, had included the study of conditions in great river deltas, the effect of land reclamation and drainage, and climatological and meteorological conditions as affecting the intensity and spread of the disease. He referred specially to the importance of the studies made in India, where, by a careful study of the conditions, meteorological and other, it was possible to foretell the probable intensity of the malarial troubles during the ensuing malarial season.

Expenditure, etc.

The actual expenditure by the League on health work in 1925 was 813,611 Swiss francs (about £32,500), but to this has to be added the sum received from the Rockefeller Foundation—730,521 francs (nearly £30,000)—in order to arrive at the total amount expended under the League's auspices. The amount estimated to be received in the way of Rockefeller benefactions in 1926 is 667,726 francs, and in 1927, 538,161 francs. The objects on which the Rockefeller grants are expended are the interchanges of public health personnel, the epidemiological intelligence service, and demographic and public health studies. For the two latter purposes the allocations for 1926 are the same as for 1925, but there is a progressive reduction in the amount expended on interchanges of public health personnel.

Many references were made to the exchanges of medical officers. The Japanese delegate said that during the past year the tours of investigation had extended to the Far East, and it had been possible for Japan to make the acquaintance of the director of the Health Section, Dr. Rajchman, and of twenty medical experts. Dr. Ramos of Cuba recalled the fact that the first exchange of medical officers took place at Havana, which was becoming a permanent centre for the exchange of information in Central and South America. The first pan-American congress on eugenics and on the physical and moral education of children will be held at Havana in February, 1927.

Other work proceeding under the auspices of the Health Section includes a special investigation of national health insurance in various countries, of the control of the manufacture and distribution of foodstuffs, and of the prevalence of trachoma. A tuberculosis commission is continuing its study of the causes underlying the decline in tuberculosis mortality. The epidemiological intelligence service continues to expand, and the monthly reports contain information regarding the prevalence of epidemic disease and certain mortality statistics in 29 European, 17 African, and 16 Asiatic countries, and in Australasia. The Third Committee, in terminating its health discussions, decided to recommend the Assembly to record its satisfaction at the widening character of the health work of the League, especially the highly valuable and somewhat dangerous work of the international commission on sleeping sickness now working in equatorial Africa, and the close collaboration which has been established with the sanitary and medical authorities of Japan as a result of the interchange of officers and the conferences held in that country.

THE STATE OF THE PUBLIC HEALTH.

SIR GEORGE NEWMAN'S REPORT FOR 1925.

[*Concluding Notice.**]

THE INSURANCE MEDICAL SERVICE.

THE total population of England and Wales in 1925 was 38,890,000, and 13,695,000 persons were entitled to medical benefit under the National Health Insurance Act. The number of insurance practitioners was 13,827, and the average number of persons on a practitioner's list was 957. The total cost of medical benefit in the year was £8,280,300, of which approximately £6,411,138 was devoted to the remuneration of doctors.

Extended Medical Benefit.

A comprehensive scheme for the provision of consulting, nursing, and laboratory services was prepared in 1914, but was held up by the war. It will be remembered that in the report of the Royal Commission on National Health Insurance, issued last March, the need of such services was fully recognized, and it was recommended that there should be supplied expert medical advice and treatment with laboratory services. Sir George Newman considers that this new system of "expert out-patient services" would include advice in diagnosis and treatment and the provision of specialist treatment necessitating special equipment and skilled assistance such as that of masseurs or electricians. He thinks that the system should be built up, not as a supplement to the existing out-patient work of the hospitals, but as an independent scheme, organized effectively throughout the country, and furnishing the closest consultation and reciprocal communication between the general practitioner and the specialist. An obligation would be laid on the practitioner to refer a patient for specialist assistance, when necessary, and to supply an account of the clinical history and present condition of the patient; the specialist would be required similarly to report to the practitioner and to give advice about any further treatment required. This obligation, Sir George Newman thinks, would have a beneficial influence on the practitioner in defining his ideas and in drawing his attention to any possible defects in his previous conduct of the case; similar services would again be rendered by the specialist's report. Such co-operation would thus operate as a valuable form of post-graduate instruction, and would therefore be welcomed by isolated practitioners, the resulting educational benefits being extended to general medical practice outside the domain of insurance work.

Obligations of the Insurance Practitioner.

The range of the insurance practitioner's obligations is discussed at some length. The insured population has statutory rights to receive all treatment, surgical or otherwise, which is covered by the contract of medical service. When an insurance practitioner claims that an operation or other service which he has actually performed is outside his insurance obligation by reason of its having necessitated special skill and experience beyond that possessed by general practitioners as a class, the onus is thrown upon him to establish the fact that he possesses such abilities. The regulations provide that he must prove that he has held appointments, or engaged in academic or post-graduate work affording opportunities for acquiring the skill and experience, and has also had recent practice of the special kind of treatment in question. Alternatively he must show that he is generally recognized by other local practitioners as having such special proficiency. Lists are given of such disputable cases in which decisions were given by referees or reached by agreement between the local medical and insurance committees. Sir George Newman considers that the procedure for dealing with these cases, which has been in operation for thirteen years, has stood the test of time, and he adds the following words:

"I think it is true to say, however, that insurance practitioners as a body are not disposed to take a narrow view of the range of their obligations; and it is known that there are practitioners who habitually and without charge render to their insured patients services which, if the question were raised, would probably be held to be outside the scope of medical benefit."

* Previous notices were published in the JOURNAL of September 11th, p. 494, and September 18th, p. 525.

Regional Medical Staff.

The regional medical staff was appointed in 1920 and enlarged in 1925; it now consists of five divisional medical officers, thirty-three regional medical officers, and thirteen deputy regional medical officers. In addition to these, from time to time part-time medical officers are engaged temporarily. During the year under review 201,832 cases were referred to it for decisions as to capacity for work, and 2,256 for a second medical opinion as to the possibility of expediting the restoration of a patient's working capacity; the corresponding figures for the previous year were 183,846 and 2,270. The great majority of these cases were referred by approved societies; and Sir George Newman expresses regret that medical practitioners have not made greater use of the facilities provided for obtaining a second medical opinion. The number of practitioners visited by the staff in connexion with the inspection of the registers of dangerous drugs was 5,197 and the number of hospitals was 54.

FOOD EXAMINATION.

In a short reference to the importance of vitamins, Sir George Newman mentions the number of food preparations on the market for which a high vitamin content is claimed. He adds that recent research work points to the possibility that chemical tests may be devised to estimate approximately vitamin contents, in which case such food preparations could be brought within the operation of the Sale of Food and Drugs Act. He refers in some detail to the problems associated with tuberculous milk, and suggests that local authorities should now reconsider their responsibility for examining samples of milk for tubercle bacilli. In many rural districts this is not practised, and county medical officers are recommended to secure co-ordination and the adoption of some common procedure in the areas under their control. Although graded milk does not yet constitute more than about 1 per cent. of the total milk consumption, yet grading is important in that it provides a high quality milk for a section of the population, and exerts a valuable educational influence on all milk production. Graded milks are, moreover, increasing in popular favour; thus the producers' licences for "Certified," "Grade A—Tuberculin tested," and "Grade A" milks were respectively 94, 98, and 176 in 1925, as compared with 71, 61, and 92 in the previous year, while there was a corresponding increase in retailers' licences. The issue of the Public Health (Preservatives, etc., in Food) Regulations in August, 1925, secured that such staple foodstuffs as milk, meat, bacon, butter, margarine, eggs, and cream should be free from preservatives, and that the presence of permitted preservatives in sausages, sausage meat, coffee extract, pickles, and sauces should be declared.

POOR LAW MEDICAL SERVICE.

It is noted with satisfaction that the practice of appointing consultant medical officers to Poor Law infirmaries is extending, and that increasing use is being made of their services, which in some cases include the actual treatment of patients under the administrative supervision of the medical superintendent. Co-operation between the medical officers of Poor Law institutions and tuberculosis officers is more complete, and it is suggested that there might well be more general co-operation also with health authorities in dealing with epidemic and venereal diseases. The total number of Poor Law infirmaries approved as training schools for nurses by the General Nursing Council at the end of 1925 was 137, 17 having been added during the year. The difficulties attending reduction of the working hours of nurses are mentioned, and it is suggested that any further decrease should be effected by lengthening the yearly leave rather than curtailing the number of daily hours of work. Sir George Newman emphasizes the special care necessary in dealing with aggregations of infants to prevent intestinal and respiratory infections, and recommends the construction and administration of nurseries on sanatorium lines, the treatment of young infants in quite small groups, the isolation of infants together with their attendants in the event of acute catarrh, and strict antiseptic precautions in dealing with individual infants and the preparation of their food.

somatic and visceral receptors, but upon a misinterpretation of these impressions due to a dynamic change in thalamic function, the sequel to toxic action. Briefly, the affective symptoms in disseminated sclerosis are probably attributable to disease of the emotional "centre" rather than to changes in organic sensibility, which are responsible, speaking physiologically, for mood changes in normal individuals.

Drs. Cottrell and Wilson suggest that the clinical data of disseminated sclerosis, so far as the affective sphere is concerned, may throw light upon the pathogenesis of the emotional phenomena of various psychoses and psychoneuroses, in which that sphere is definitely disordered. Such suggestions merit careful consideration, since the clinical resemblances between the affective symptoms described in this paper and those observed in some psychotic states are very striking, and it may be that they have analogous neurological determinants. As an instance, the curious dissociation between feeling, thought, and action (intrapsychic ataxia), which is so characteristic a feature of dementia praecox, may be cited. In such cases, as Kraepelin observes, "the patients laugh and weep without recognizable cause, without any relation to their circumstances and their experiences; and they smile while they narrate their attempts at suicide." The resemblance to the incongruous emotional reactions noted in disseminated sclerosis cases and referred to above is here very evident. It is useful also not only to compare but to contrast the affective disturbances in the biogenetic psychoses with those in disseminated sclerosis. In the latter, in spite of the presence of widespread disease of the central nervous system, the affective disturbances, though characteristic, are mild, and there is no disintegration of the personality. In the former, however, though there are no objective signs of organic disease of the central nervous system, the affective symptoms are severe, and there are profound disturbances of the personality as a whole. Though cerebral mechanisms are no doubt involved in psychoses, the biological factors responsible for the serious changes in the emotional and instinctive life which characterize these disorders must be sought for elsewhere than in the central nervous system, and it would seem probable that the source of these changes is to be found in the depths of the organic life—in disorders of the endocrine glands and the vegetative nervous system.

INCOME TAX: THE THREE YEARS' AVERAGE.

THE Royal Commission on the Income Tax, which reported in March, 1920, received a good deal of evidence as to the suitability of a three years' average as a basis of assessment for professional and commercial profits. The report was emphatic on the point. Paragraph 479 says: "There has been a surprising weight of evidence in favour of the profits of the previous year being taken as the basis for Schedule D assessments. Hardly anyone has a good word to say for the average. . . . We have therefore no hesitation in recommending that the change be made." The change has been some time in coming, but that is perhaps not unnatural. In such a matter the interests of the Exchequer and the taxpayer are directly opposed. No Chancellor could very well desire the change if it meant that two "good" years would drop out of the average, while taxpayers as a whole would have a real grievance if the change were introduced at a moment which would enable the Chancellor to collect tax on a single year's basis appreciably in excess of the amount payable on the basis which was discarded in their general interest.

Presumably when he was laying his plans for the 1926-27 Budget Mr. Churchill felt that he could reasonably expect the profits of 1926 to be fairly normal, and therefore to provide a suitable starting-point for the new basis. Accordingly there has been inserted in the Finance Act a group of sections, Part IV of the Act, the effect of which is, broadly, to sweep away the three years' average and to substitute the basis of the previous year. Having regard to the general expectation that profits are being adversely affected by the coal strike, it is perhaps unsafe to assume that second thoughts will not lead to the change being still further postponed. It is, of course, obvious that such a change, even if effected in a year when the profits of the nation were normal, might work unfairly as between one taxpayer and another, and it has therefore always been assumed that the change would be accompanied by some special relaxations to mitigate individual hardship. Some of the modifications introduced have reference to professions "set up" or "permanently discontinued"; a medical practice falling under either of these heads would not normally be yielding substantial profits, and consequently those sections are not of direct interest to practitioners. It may, however, be remarked in passing that the new rule which requires that the final year of a discontinued business or practice shall be assessed at the amount of the profit for that year will prevent a certain amount of "legitimate evasion" to which the three years' average is said to have lent itself in some branches of commerce.

The new rule which is of importance to medical practitioners is Section 29, Subsection 3, of the Finance Act, 1926. Where the change involves individual hardship it will presumably be because the years 1924 and/or 1925 were comparatively poor, so that their exclusion from the calculation of the 1927-28 assessment will adversely affect the practitioner. The line taken is that cases of substantial hardship will be met, but not those where the adverse effect is comparatively small; and the means for giving this partial relief are rather ingenious. It is important that our readers should appreciate the position, and we therefore make no apology for stating it in some detail. The relief given consists in affording the taxpayer the option, in certain circumstances, of having his assessments for 1927-28 and 1928-29 (the option applies to the two years, but not to only one of them) made on the three years' average. This right of choice, which must be exercised not later than October 5th, 1927, arises where the profits of 1924 *or* 1925 are less than the average profits of the six years to 1923 inclusive. It follows, therefore, that a practitioner will be well advised to examine his past returns before the time limit expires, to see whether he has this option, and if so to decide whether it is in his interest to exercise it. In making the latter decision he should have regard to his probable earnings for 1927; if they are likely to be small it may suit him best to allow his option to expire unexercised. If the taxpayer has not been in possession of the source of profits during the whole of the specified six years, he can take for the purpose of the comparison the average over the period during which he has been in possession of that source. The proviso dealing with partnerships has peculiar relevance to the medical profession. It will be realized that alterations in the personnel of partnerships would, by destroying the continuity of possession of the source

British Medical Journal.

SATURDAY, SEPTEMBER 25TH, 1926.

EMOTIONAL CHANGES IN DISSEMINATED SCLEROSIS.

THE current number of the *Journal of Neurology and Psychopathology*[1] includes an important study on the affective symptomatology of disseminated sclerosis by Drs. S. Smith Cottrell and S. A. Kinnier Wilson. The conclusions reached by the authors, which are based upon the neurological and psychological investigation of 100 consecutive cases of disseminated sclerosis of both sexes, have more than a theoretical interest, because it is considered that the emotional symptoms described are definitely characteristic of disseminated sclerosis, that they are primary or direct results of the disease processes, and that they are wholly independent of degree, duration, or clinical type. It is stated, indeed, that affective symptoms are more frequent than any single symptom of the neurological series (nystagmus, scanning speech, tremor, spasticity, etc.), and that they constitute diagnostic criteria of greater value than any neurological symptom-complex. This clinical contribution is thus of definite practical interest, and merits the attention, not only of the neurologist and psychiatrist, but also of the general practitioner, who meets with cases of disseminated sclerosis in both its early and late stages.

The authors found that the abnormal emotional reactions were exhibited in three directions—in changes of mood, in changes of bodily feeling, and in changes in emotional expression and control. In 100 per cent. of the cases an alteration in the prevailing mood of the patients was observed. In 63 per cent. there was an increased sense of mental well-being. The authors suggest the phrase "euphoria sclerotica" to indicate this common affective state of ease, tranquillity, serenity, happiness, or even gaiety in patients with disseminated sclerosis, and the phrase "dysphoria sclerotica" to indicate the feeling of mental unrest, disquiet, uneasiness, or unhappiness which was observed in 10 per cent. of their cases. In 25 per cent. an increased variability of mood was noted in which the patients were subject either to abrupt transitions from a mood of sadness to one of euphoria, or from euphoria to sadness. In two cases an indifferent and stolid reaction was recorded as a change in the emotional attitude since the onset of the disease.

The sense of physical well-being (eutonia sclerotica) which the authors discovered in 84 per cent. of their cases led them to the view that this must also be accepted as one of the fundamental symptoms of disseminated sclerosis. It was discovered in early and late stages of the disease, and was in some cases in striking contrast with the actual physical incapacity of the patients concerned. Thus a patient who was almost moribund when examined declared that physically she "felt all right," and was neither tired nor weary, but quite at her ease. In many instances the patients were themselves more than a little amazed at the apparent incongruity between their sense of bodily ease and health and their actual crippled state. A similar though much more extreme eutonic state is, of course, common in general paralysis of the insane. Here, however, the patients actually believe themselves to be possessed of unusual physical power, and are unable to appreciate the fact that they are the subjects of a crippling physical illness. This lack of insight is in some measure due to the fact that there is considerable intellectual deterioration—a condition very rarely observed in patients with disseminated sclerosis. The latter *feel* well, but are conscious of the fact that they are suffering from a physical malady. Indeed, disseminated sclerosis is but rarely associated with psychotic symptoms. Thus, of 6,700 patients in the Manhattan State Hospital (1921) there were only three cases of disseminated sclerosis. In 84 per cent. of the patients an attitude of optimism about the future and their prospects of ultimate recovery, similar to that which obtains in advancing cachectic conditions such as pulmonary tuberculosis (spes phthisica), was observed.

The exaggeration and facility of outward expression of emotion in disseminated sclerosis is regarded by the authors as a symptom of immediate diagnostic value. Thus, when in a young person simple routine questions are responded to by gratuitous and uncalled-for smiles or laughs, disseminated sclerosis, it is suggested, at once becomes a diagnostic probability. In some cases, indeed, undue affective display was one of the earliest symptoms of the malady, before any somatic neurological sign had made its appearance. In only three cases was no emotional overaction present; in 71 per cent. the expression was "set" to smiles or laughter; it was "set" to tears in only 3 per cent.; and in 19 per cent. laughing and crying alternated. These emotional reactions occurred "in season and out of season"; under slight provocation, at the bidding of minimal stimuli, they made their appearance when there was obviously no warrant for them. In advanced cases in particular, when there is a serious defect of articulation so that the patient is unable to make himself understood, it is often difficult to know how far the uncontrolled emotional display is expressive of the actual mood of its subject. This problem was made the subject of a special investigation in this research, and it was found that in a large proportion of cases there was a definite and striking incongruity between the emotional content and its outward expression. Thus in one instance, while a depressed patient was recounting thoughts of suicide which she entertained, her face was wreathed in smiles and she frequently burst into uncontrollable laughter.

Apart from its purely clinical interest, this contribution would seem to add to our knowledge of the neuropathology of emotional disturbances. As regards the pathogenesis of the affective symptoms in disseminated sclerosis, it is considered that, like the somatic symptoms, they probably arise from invasion of the cerebral mechanisms by a toxic agent. More specifically, the abnormal emotional reactions are associated with the well known pathological fact that the disease almost constantly shows subependymal spread, and the relative conservation of the intellectual faculties with the relative conservation of the cortex. Evidence is also adduced which suggests that the affective symptoms are the outcome of the invasion of the palaeothalamus by the morbid process. The interesting fact emerging from this research is that the alterations in the emotional life would seem to depend, not upon an alteration, either quantitative or qualitative, of the totality of the afferent impressions from

[1] *The Journal of Neurology and Psychopathology.* July, 1926. London: The British Medical Association. Published quarterly. Subscription 30s. per annum; single numbers 8s. 6d. net, post free.

it is becoming more and more the practice to erect lofty hospital buildings, thus securing concentration of service, plumbing, and heating. Two rows of eight to twelve beds each are most convenient for a general ward, and at least one small isolation ward should be available. Sanitary annexes with cross-ventilated entrances should be readily accessible, and in each ward a large fixed wash-basin for staff use, with hot and cold water laid on, saves much labour. It is recommended that in main wards for adults a wall space of 8 feet per bed should be allowed, a floor space of not less than 96 square feet, and a capacity of not less than 1,056 cubic feet. In open-air wards having a single row of beds the wall space should not be decreased, but reduction can be made in the floor and cubic space. In isolation wards for one bed only, 120 square feet of floor space and 1,200 cubic feet are advisable, and for more than one bed the standards suggested for main wards are applicable. In most hospitals the provision of some day-room accommodation for ambulant patients is desirable. The operation department should be central, with a northerly aspect, readily accessible, and with the radiological department near. The out-patient department should form a separate block connected by a covered corridor with the receiving and casualty department. Practical suggestions are given in this memorandum about the disposition of administrative accommodation; and in general it will be found to be a valuable summary of the main points concerned in modern hospital construction.

THE LEAGUE OF NATIONS AND THE UNIVERSITIES.

NOT all the delegates attending the present Assembly of the League of Nations come from the senates and embassies. Quite a number this year have come from seats of learning. Almost every university of Europe is represented at Geneva. The French delegation includes two professors—one from the University of Paris and the other from that of Lille. The Belgian delegation is headed by the professor of social science at Brussels. Norway has sent two professors; one of them, Dr. Fridtjof Nansen, G.C.V.O., the Arctic explorer, has been professor of oceanography at Oslo since 1908. Finland is represented by a professor from Helsinki, and Rumania by two professors —one from Bucarest and the other from Cluz. One of the Swiss delegates has a universiy chair at Berne, and one of the Polish delegates is dean of the University of Cracow. All the five delegates and substitute delegates for the Netherlands are doctors of law and political science, and the most prominent of them is professor at Leyden. The Irish Free State has sent a professor from the National University of Ireland. The German delegates number about twenty-four persons, including the technical experts, and fifteen of them hold doctorates. Of the women delegates one of them is a Swedish master of law, and another a member of the Rumanian Academy. Only three medical men, apparently, are attending the Assembly in an official capacity. One of these is Sir George Buchanan, C.B., M.D., of the Ministry of Health, who is attached as an expert to the British delegation; another is the Hon. Philippe Roy, M.D., Commissioner-General for Canada in France; and the third is Dr. Domingo Ramos, who has taken a leading part in introducing into Cuba the principles of infant hygiene. The question of some international linkage of universities has been the subject of long discussions in the committees of the present Assembly. Italy, among other countries, is setting out to attract foreign students, by organizing special courses for them at the universities, with exemption from taxation during their stay, and with travelling facilities. Canada is establishing in the university centre of Paris a Canadian house for its students. The work of international interchange of professors and students is being subsidized by the Polish and Czecho-Slovakian Governments and by an educational organization in Germany. Dame Edith Lyttelton, on behalf of Great Britain, assured the Assembly of the sympathy of her Government in any system of international scholarships and exchanges, and similar expressions were made by the delegates of Rumania and of the Netherlands. This work, so far as it has assumed any shape at all, is being done through the International Institute of Intellectual Co-operation, recently set up in Paris as the result of a gift to the League by the French Government.

TROPICAL TYPHUS.

DRS. WILLIAM FLETCHER and J. E. LESSLAR[1] of the Hospital for Medical Research, Kuala Lumpur, Federated Malay States, have given the name of "tropical typhus" to a disease which differs from ordinary typhus by its low infectivity, though the symptoms and behaviour of the Weil-Felix reaction are identical in both forms. The epidemiological features, however, are so fundamentally different in tropical typhus that they do not bear even a family resemblance to those of the epidemic disease. There is no evidence of the direct infection from man to man which occurs so readily in epidemic typhus. No body-lice were found on any of the patients, and there was strong evidence that these insects were not the vectors. On the other hand, the virus seems to be connected in some way with open, uncultivated grazing land. One of the most striking features of the disease as it exists in the Federated Malay States is its race incidence. Compared with the Malays, Chinese, and Tamils who form the bulk of the population, the numbers of other nations are comparatively insignificant. Punjabis constitute less than 1 per cent., and Europeans were less than 0.5 per cent.; yet seven of the typhus patients were Europeans and seven were Punjabis; only four were Tamils, and there were no Malays or Chinese. Nearly all the Asiatic patients were cowkeepers, and the high incidence of the disease among Punjabis is probably due to so many of them following this occupation. The number of Europeans affected is explained by the association of six of them with the same source of infection. The treatment of tropical typhus is the same as that of the epidemic form, but is easier to carry out because there is less likelihood of the infection spreading to the attendants. The authors maintain that the tropical typhus of the Malay States bears a close resemblance to the typhus-like disease described by other authors in different parts of Asia, Africa, and America, and in a recent communication[2] attribute the contradictory results of the Weil-Felix reaction to different strains being used in various countries.

DEGREES FOR PRACTITIONERS: M.D. LAUSANNE.

OF the five Cantonal or State universities in Switzerland which have a faculty of medicine and grant the degree of Doctor in Medicine, it is not as widely known as it might be that two of these—Lausanne and Berne—welcome British practitioners and allow them to proceed to the M.D. degree under reasonable conditions. The University of Lausanne has some thirty-five professors in the Faculty of Medicine, and about 800 students and 200 auditeurs attend the university. The teaching hospital, the Cantonal, situated in the Avenue du Buglon, contains some 500 beds, and the children's and maternity blocks on the other side of the road, built in 1916, contain a further 200 beds, surpassing in design, construction, and equipment any hospital in Europe. British practitioners are received upon the same footing as the Swiss holding the Swiss Federal Diploma, and may obtain the M.D. degree on complying with the following regulations. (1) Matriculation in the university and registration as a student, on production of

[1] *Bull. Inst. Med. Research*, Federated Malay States, 1925, No. 2.
[2] Ibid., 1926, No. 1.

of profit of the person (that is, the firm) assessed, in many cases render the option nugatory unless steps were taken to obviate it. That point is met by providing that persons in a partnership shall be deemed to have been in possession of the source of profit during any year if any of them was in that year a whole or part proprietor. If, for instance, X, Y, and Z succeeded to a practice carried on by X and Q up to December 31st, 1923, their profits for 1924 or 1925 can be compared with the average profits of X and Q for the previous six years. It is not unlikely that practitioners will find that the existence of the option will depend in particular cases on the years in which there was abnormal expenditure—for example, incurred in the replacement of motor cars. Where such replacements have occurred in 1924 or 1925 that may very well bring the option into play, and in that way compensate the practitioner for the partial loss of the allowance which the abandonment of the three years' average would otherwise entail.

The change has long been overdue, and we congratulate Mr. Churchill on the preparations he has made to give effect to it next year, at the same time cherishing the hope that he will not allow himself to be affected by the depressing financial circumstances of 1926, and shrink from the plunge when the time comes for the final decision next April.

OPIUM POLICY IN INDIA.

REPORTS from Geneva indicate that there have been lively discussions in the fifth committee of the League of Nations over the opium question.[1] Disappointment was expressed, even by those who were mainly responsible for the Geneva Opium Convention of 1925, at the few ratifications of that convention which have been as yet deposited; while the Italian delegate hotly dissented from Viscount Cecil's remarks, and maintained that the convention of 1925 was, in fact, in some respects a step backwards from the Hague International Opium Convention of 1912. Except for the new opium policy of the Indian Government, whereby export of opium for other than medicinal purposes is to be reduced progressively and extinguished within a definite period, there would seem to be little advance to record during the past year. This policy has been endorsed by the Council of State and carried "amidst acclamations" by the Legislative Assembly of India; though a recent reply in the House of Commons has indicated that the period within which extinction of exports is to be achieved has been extended to ten years. A pamphlet recently published by the Foreign Policy Association of America gives a concise summary of "The Opium Situation in India."[2] It postulates the world's medical requirement of opium at 350 tons a year, whereas a minimum estimate of the world's total production of opium is put at 3,500 tons a year. The surplus is accounted for by its use for smoking in the Far East, for eating in India, and by illicit traffic. Four countries are the main producers of opium—namely, Turkey, Persia, India, and China. The opium of the two latter countries is mainly consumed either by smoking or eating; that from the two former countries is largely used for medicinal purposes, for the production of morphine and other alkaloids, although much finds its way into illicit hands, and is used for non-medicinal purposes. The results of the Geneva conferences of 1924-25 are thus summarized: "No agreement could be reached on reduction of production to medical needs. The ten-year period for suppression of opium smoking (proposed by the United States) was extended to fifteen years, and made contingent on control of smuggling from China and other producing countries. The United States and China withdrew before the conferences ended, but the other countries completed and signed two treaties, one dealing with smoking opium, the other regulating control of drugs." The question is raised, but not answered, as to whence the countries which have hitherto derived their supplies of smoking opium from India will obtain the drug when India ceases to export, if they fail to suppress the smoking of opium. In 1923-24 India exported more than a million pounds of opium to the Straits Settlements, Indo-China, Siam, Persia, Dutch East Indies, North Borneo, and Japan. As regards eating opium in India, a use of the drug which the Government has held, on the doubtful authority of the Royal Commission of 1893-94, to be "legitimate" and salutary—a matter of merely domestic concern and not one for international investigation—new light has recently been thrown on the problem by various non-official investigations and by discussions in the Legislative Assembly. Accepting the League of Nations index figure as 12 lb. of opium per annum for 10,000 population to meet medical requirements, it appears that while the average for all India is stated to be 24 lb., in Assam it is 104 lb., in parts of the Punjab over 100 lb., in Bombay 86 lb., in Rangoon 218 lb., and in Calcutta 287 lb. Such variations in the distribution of consumption point to opium addiction in particular towns and districts, and cannot be explained by its use as a domestic remedy in places where medical advice is not available. The relatively low average of consumption for the whole of India masks the grave addiction in certain localities, and shows that in rural areas this "treasured household remedy" is not so widely resorted to as may have been supposed. It is well to know that this question of internal consumption of opium in India is engaging the attention both of the Government of India and the local governments in the different provinces.

[1] BRITISH MEDICAL JOURNAL, September 18th, 1926, p. 537.
[2] F.P.A. Pamphlet No. 39. Series of 1925-26. May, 1926. New York City.

HOSPITAL CONSTRUCTION.

IN view of the prevalence of schemes for the rebuilding or extension of voluntary hospitals, an eight-page memorandum[1] has been prepared by the Voluntary Hospitals Commission to guide those concerned in planning buildings which shall combine economy of cost and administration with suitability for their special requirements and allow extension in the future. Hints are given about the site, nature of access, including road-making, general disposition of the buildings for convenient grouping of patients, simplifying the service, and how to obtain the maximum sunlight. Hospital buildings are now less solidly and elaborately built than was the case during last century, and the provision of verandahs, roof wards, and sliding windows to wards is becoming more general. Modern buildings are simple in character, inexpensive in treatment, and depend for their pleasing effects on good design, appropriate grouping, and correct proportions. Buildings may be classed as permanent, semi-permanent, and temporary, and it is indicated that an apparent economy in adopting the cheaper and less permanent types may prove to be fallacious, since the saving in cost is usually less than the reduction in value. Such an initial compromise as the provision of permanent and fireproof walls and floors, with a subdivision into rooms by the use of partitions and not of permanent walls, may be advisable in some cases. Detailed recommendations are given about the construction of floors, interior linings of the walls, sanitary fittings, heating, and windows. The pavilion form of ward arrangement is becoming increasingly popular, and good cross-ventilation is so obtainable. Pavilions of three stories require lifts, and it is considered inadvisable to exceed this height in this country. In America, on the other hand,

[1] Memorandum on the Construction of Voluntary Hospitals. Voluntary Hospital Commission 17. Published by H.M. Stationery Office. Price 2d. net.

CANCER OF THE BREAST.

THE MINISTRY OF HEALTH MEMORANDUM.

THE new memorandum (Circular 716[1]) of the Ministry of Health on cancer of the breast, to the issue of which we called attention last week, is an extended and revised version of Circular 496, which was published in May, 1924. In this revision additional and more exact data, based chiefly on investigations by Dr. Janet Lane-Claypon, by a subcommittee consisting of medical officers of health of several great cities, and at Leeds, have been incorporated. The time has been thought ripe also for a section on the practical applications of the information which has been accumulated so far by the Departmental Committee on Cancer, of which Sir George Newman is chairman.

In the introduction to the memorandum it is pointed out that no other organ contributes more largely than the breast to the cancer mortality amongst women in England and Wales; that the upper and outer quarter of the organ is the situation in which cancer most commonly appears, and that the area surrounding the nipple is the next most common seat of the disease. The memorandum then describes the natural course of mammary cancer, and calls attention to the facts that the onset cannot be fixed with any degree of accuracy; that even in women of the same age and the same habit of body some cases run an acute and others a chronic course; and that age appears to have some influence on the course of the disease. The average natural duration of a case of cancer of the breast seems to be a little over three years.

Etiology and Diagnosis.

The Departmental Committee has come to the conclusion that recent investigations have demonstrated statistically that chronic mastitis and a history of injury are more commonly found in women who develop cancer than in those who remain unaffected. The investigations have shown also that the less fertile married women, those who have had acute transient mastitis, deformity or abnormality of the breast, and possibly those in whom suckling has been absent or excessively prolonged, are more liable to suffer from the disease. Neither disturbances of menstruation and the menopause nor the nature of confinements can be shown to exert any influence. The committee thinks this knowledge may open up a wide field of investigation for tracing the development of cancer back to its starting point.

Under the heading diagnosis, stress is naturally laid upon the early identification of the nature of a mass in the breast. The committee dismisses as dangerous and inconvenient the method of removing a portion of the growth for microscopical examination. It finds that the method of examining microscopical sections during the course of an operation has proved unsatisfactory, since masses which are difficult to identify with the naked eye are very frequently those which display doubtful appearances under the rapid microscopical examination during operation. The greatest reliability and least risk is to be found in incising the growth at the time of operation and being guided as to subsequent procedure by the naked-eye appearance of the incised tumour, every care being taken to avoid transference of cancer cells to the wound.

Operative Treatment.

At the present time the one chance for a patient with cancer of the breast is early surgical operation. The memorandum discusses operation from the standpoint of the surgeon and from the standpoint of the patient. It is the point of view of the patient which, in the opinion of the committee, has led to the unfortunate position that with improvement in surgical technique there has been no corresponding increase in the proportion of cases which reach the surgeon at a stage when operation offers the greatest advantage. On the average, patients do not seek medical advice until eight or ten months after the growth was first noticed, and it is hinted that even by the medical profession the good results achieved by early operation are imperfectly appreciated.

[1] H.M. Stationery Office, 1d. net.

What is the measure of the success of surgical treatment? The memorandum sets forth the results of the special investigation carried out at Leeds, and contained in the Ministry of Health 1926 reports on public health and medical subjects No. 34.[2] This investigation showed that, with the modern complete operation, 52 per cent. of all the patients were alive and well after three years, 39 per cent. after five years, and 30 per cent. after ten years. But if the patients were classed as being in the early, middle, and late stages of the disease when operated on, it was found that of the early cases 94 per cent. were alive and well after three years, 91 per cent. after five years, and 87 per cent. at the end of ten years. The committee summarizes the position thus:

> "On the average women affected by cancer of the breast have, in the absence of effective treatment, roughly one-sixth of the normal duration of life to look forward to; those subjected to the complete operation during the comparatively early stage of the disease at which the average patient applies for treatment under present unsatisfactory conditions have about one-third of the normal duration to expect; while those so operated upon at an early stage may anticipate approximately two-thirds of the normal after life-time."

It is estimated by the committee that about 50 per cent. of the total number of sufferers from mammary cancer undergo operation in large hospitals. Of the others some are operated on at their own homes, in nursing homes, and in cottage hospitals, others attend hospital too late for operation, while the remainder probably fall into the hands of unqualified practitioners or come under the care of registered medical men only at the latest stage. Not more than one in five or six of all victims of the disease obtains the best treatment available.

Measures to Reduce Mortality.

To reduce mortality every possible means should be taken to induce all women who are conscious of any abnormal condition in the breast to seek medical advice without delay, especially if they have reached, or are reaching, middle age. The committee suggests that for this purpose the information set out in the memorandum should be disseminated by leaflets, "talks," advice by local cancer committees, doctors, health visitors, and social workers. Educative advice, it is thought, should be of value, if directed towards securing treatment of the earlier conditions which precede cancer, and towards the avoidance of injury, especially habitual injury. The committee thinks that the intensive researches now being carried out may lead to the discovery of the cause of malignant disease, and yet may not necessarily indicate a means of prevention; also that preventive measures could not secure early results, since the disease is one of slow development due to effective or predisposing causes operating over a prolonged period. Hence the necessity of all the educative and remedial measures now available.

The Situation Generally.

In a memorandum such as that before us, addressed in as non-technical language as possible to local authorities consisting of laymen, there is, of course, little that is controversial. It is gratifying to learn that the departmental committee has satisfied itself statistically that the results of so-called early operation are so good. It is clear that no operation can be really early, since the growth of cancerous cells must have proceeded a long way before any mass in the breast becomes appreciable to the touch. It is italicized in the memorandum that "in its early stages cancer is usually unattended by pain," so that it is by palpation of a mass alone that early diagnosis can be made. Hence the disappointment which sometimes occurs when recurrence follows a complete operation for a growth which is no bigger than a pea. The educative advice proposed by the departmental committee for the purpose of securing treatment of conditions preceding cancer, and for the avoidance of injury, is based, no doubt, on Dr. Janet Lane-Claypon's report on "associated antecedent conditions," upon which we commented on March 6th last (p. 437). We still feel the doubt we then expressed whether the statistical method is conclusive on the close association between injury and the subsequent development of cancer. The human factor is too uncertain. We still maintain that a person

[2] BRITISH MEDICAL JOURNAL, August 14th, 1926, p. 318.

a matriculation certificate of any British university, or of any preliminary examination recognized by the General Medical Council for the purposes of registration as a medical student; also production of the certificate of the degree or diploma qualifying for practice in the United Kingdom and the certificate of registration as a medical practitioner in the United Kingdom. (2) Undergoing with success a colloquium—that is, a viva voce examination—in any three of the subjects of the final medical examination, at the choice of the candidate—for example, medicine, surgery, diseases of children, or midwifery. (3) The presentation of a thesis for the doctorate, which has been prepared and completed in the clinic under the direction of one of the professors in the Faculty of Medicine, in any subject in the medical curriculum. Condition (1) is usually complied with upon arrival, (2) after about three months, and (3) at the end of the session. Most of the professors speak English well, and the choice of subject for the thesis may be made by the candidate and approved by the professor, or may be made by the professor himself. The standard, though high, is well within the reach of steady work during the required semester of residence (October to March). After the thesis has been accepted by the Faculty of Medicine its printing is authorized by the dean, and 200 copies have to be handed in—150 to the university and 50 to the dean. The fees are: On matriculation 20 francs; on inscription for the colloquium 50 francs; on presentation of thesis 200 francs; diploma and graduation 25 francs; courses, lectures, library, and laboratory fees about 80 francs; the printing of the thesis costs about £7 to £12, according to length, tables, diagrams, etc. It is possible to live comfortably for £10 a month. Applications for admission should be made to the Dean of the Faculty of Medicine, École de Médecine, Place de l'Ours, Lausanne, and to the professor in the subject in which the candidate wishes to do his thesis. The *Students' Guide* is issued in October and April, and may be obtained for 50 centimes from F. Haeshel-Dufey, 3, Rue Centrale, Lausanne (*Guide de l'Étudiant*). Further particulars may be obtained from C. A. H. Franklin, M.D., honorary secretary of the Lausanne Medical Graduates, 56, Southborough Road, Bickley, Kent. The winter session 1926-27 opens on October 13th. It should be made clear that the university degree of M.D. does not confer the right to practise in Switzerland, which requires the possession of the State or Federal Diploma, the examinations for which are conducted by a board of examiners drawn from all the universities. The Swiss students, after matriculating in one of the universities, pursue a five years' course of study, taking the first, second, and final examinations for the federal diploma; when this has been obtained, they proceed a year or so later to the M.D. degree of their own Alma Mater (though they may take it in any of their universities), the Federal Diploma thus corresponding to our own M.B. The Swiss do not make it easy for foreigners to practise in Switzerland, as the cheapness of higher education gives them more doctors than they require, but they welcome British practitioners for a period of study and to spend a time in one of their schools.

IN PRAISE OF GAS FIRES.

AT the Smoke Abatement Exhibition at Birmingham on September 16th a paper on the "Contribution of the gas industry to the problem of smoke abatement" was read by Sir Arthur Duckham, Director-General of Aircraft Production, and an authority on the carbonization of coal. He said that the domestic fire was the chief producer of smoke, and was responsible for five-sixths of the total production. It appears that of the 180 million tons of coal consumed annually in this country in normal times, about 40 million tons are used for domestic purposes. While from the average factory furnace only about 0.5 per cent. of the coal escaped in the form of soot, no less than 6 per cent. escapes in this form from the tops of domestic chimneys. When coal is carbonized the gaseous and solid fuels obtained are smokeless when burned. Moreover, a considerable amount of sulphur is eliminated from the products, and so does not pass into the atmosphere. Birmingham, according to Sir Arthur Duckham, has taken the lead in substituting gas for coal in its manufactories, and also in domestic heating and lighting, although in the latter respect it is almost equalled by some of the large health resorts. In Great Britain Birmingham comes first with a consumption of 285 therms of gas per consumer per annum. In Bournemouth and Bath the consumption is about 250 therms. In several new housing estates and garden cities the houses are being rendered non-smoke-producing by the installation of a gas cooker, a gas boiler, and two gas fires. The development of small efficient hot-water boilers, working on gas or coke, is overcoming any hot-water difficulty. Sir Arthur Duckham laid down the general rule that domestic cooking and heating should be done by gas, and the general heating of water by coke if a continuous supply is required. The gas industry is certainly doing its best to overcome the Englishman's liking for the companionship of a coal fire, by artistic improvement in gas stoves, and by a study of the ways in which gas coke can be cleaned and graded before delivery, and the consumer instructed in the proper way of burning it. An additional advantage is claimed for the independent water-heating apparatus, using gas or coke, in that radiators can easily be installed. In Sir Arthur Duckham's opinion the gas industry has placed remedies against smoke in the hands of consumers, and the production of smoke is a crime against our national welfare. While sympathizing in general with his views on smoke abatement, we are not quite sure he is correct, however, when he says that fear of "that family bugbear cold in the head or on the chest is greatly reduced" by central heating.

OPHTHALMIC WORK IN EGYPT.

THE tenth annual report on the ophthalmic work of Egypt[1] has just been issued. It is noted that a grant was made by the Imperial War Graves Commission, as a memorial to the men of the Egyptian Labour Corps and Camel Transport Corps who fell in the great war, for the building of a permanent laboratory at the hospital at Giza. The Egyptian Government has made a grant for the equipment of the laboratory. The most interesting section of the report is that dealing with blindness. The definition of blindness adopted is that proposed by Trousseau—inability to count fingers at one metre. Of the causes of blindness the results of conjunctivitis are the most important, as they account for nearly two-thirds of all the cases; glaucoma and cataract are responsible for some 5 per cent. each; the number of other cases—due, for example, to congenital defect, accidents, and uveal disease—is relatively small. A census of the blind taken in 1917 showed a small decrease as compared with those enumerated ten years earlier. It is stated that 31 per 1,000 of the population were blind in one eye and 12 in both. Moslems account for 44 per cent., Christians 37, and Jews 5. At all ages the percentage of males suffering from total blindness is greater than that of females. The figures obtained for infants under 1 year are thought to be relatively valueless. The greatest increase is between 1 and 9 years, when the proportion is practically doubled. The number of cases of total blindness increases to a striking extent after 40 years of age. School medical inspection and the treatment of elementary school children have led to a very real advance in dealing with trachoma.

[1] Tenth Annual Report of the Ophthalmic Section, Department of Public Health. Cairo: Government Press. 1926. (Pp. 48; P.T.10.)

amongst beginners is high. This has led to the development of vocational selection and guidance. In collaboration with the National Institute of Industrial Psychology the Board carried out an investigation of the occupations taken up by 2,000 children leaving schools in a London borough. An intensive individual study of all the children due to leave three of the schools in the following twelve months was then conducted, and vocational recommendations based on this study were made. After two years as many as possible of these children were traced. The complete study of the children involved examination of the home conditions, the physical conditions, and the mental conditions, including intelligence, specific capacities, educational attainments, special interests, emotional, moral, and social qualities. A distinct relationship was found between material prosperity of the homes and general intelligence of mothers and children; but the relationship was comparatively slight, the average intelligence of children from superior homes being only 20 per cent. above that of children from the poorest. Native intelligence, at any rate in children of school-leaving age, is regarded as of outstanding importance in the choice of a career; and this is the easiest of all psychological characteristics to test reliably. It appears that judgement on well defined elementary traits, especially the emotional, is generally far more accurate than judgement on more complex moral qualities, such as honesty, industry, and reliability. Judgement on the latter is extremely fallible; and it is in this direction that more carefully developed tests are expected to prove valuable.

The results of the investigation into the success of vocational guidance are indefinite owing to the smallness of the numbers of children dealt with. Apparently about 84 per cent. of those traced are satisfied; 14 per cent. are satisfied with their work, but not with their pay or prospects; and only about 2 per cent. are dissatisfied with the work into which they were guided. Of those who went into work dissimilar to that recommended, 40 per cent. are satisfied, 18 per cent. satisfied with the work, but not with the pay and prospects, and 43 per cent. are dissatisfied.

The section in the report on movement and time study shows, first, that movement study is a logical sequel to vocational guidance and selection. It aims at providing standard methods of training for beginners. Several interesting accounts are given of the alteration in comfort and output achieved by teaching the workers more suitable movements in carrying on their work. Thus in outside grease dollying, a process applied in the manufacture of spoons and forks, the reduction in time effected by a standard method over an original method amounted to between 30 and 60 per cent.

Some Reflections.

The subject of industrial fatigue and the researches which are being carried out by the Board can be looked at from various points of view. Scientifically increase in knowledge of the human being, of his psychology and his reactions to industrial life, is of value, and should be of value to medical men, every one of whom is bound to meet patients on whom their employment has had some effect physically or mentally. For the employer of labour the researches are important, in that they may assist in increasing production, in lowering cost, in showing him how to get the maximum of efficiency from that physiological machine which is his worker. To the industrial worker himself the researches should bring greater comfort and less fatigue. To the philosopher it may perhaps occur to wonder what exactly will be the end of these researches. He may feel, in reading the report, a sort of vertigo at the thought of the time when every possible emotion, volition, and action of the worker has been analysed, sorted out, and provided for; until the "factory hand" has become a perfect robot-like machine, doing with the maximum of efficiency the maximum of work in the shortest possible time. But if the philosopher is also a man of science he will remember that all knowledge is of value, and that the investigators of the Industrial Fatigue Research Board have still left the whole of the worker's unemployed time, his home life, his loves, his hates, and his amusements, for subsequent research.

OUT-RELIEF FOR SINGLE MINERS.

THE SITUATION AT HOUGHTON-LE-SPRING.

THE following note describes briefly the trouble that has arisen in a coal-mining district through an attempt by the local board of guardians (the majority of whose members are professed socialists) to induce the medical officers to rescue it from a dilemma at the cost of their professional honour.

On August 16th and 17th the five part-time medical officers of the Houghton-le-Spring Union in the county of Durham had interviews with the board of guardians. The guardians informed them that outdoor relief had been given to single men since the beginning of the coal strike, the number being over 2,000. A letter had been received from the Ministry of Health pointing out that such indiscriminate relief was illegal; relief could only be given to single men if they were found on medical examination to be physically incapable of work by reason of want or privation. The guardians asked the doctors to get them out of this difficulty by giving such certificates to these men, certifying them to be incapable of work. The doctors were faced with the situation that to their knowledge the very large proportion of these 2,000 men were not so incapable, and the task of refusing certificates to such a large number of men who had been getting relief would carry serious consequences to themselves, their practices, and their property. They felt there was no alternative between incurring the odium of stopping this relief, or bowing before the pressure of local opinion and granting such certificates wholesale. One of the doctors was notified that 200 men would be at his house that evening, and 200 more on the following morning, for certificates.

After consultation with the British Medical Association the five medical officers decided that the only honourable course was to give a month's notice to resign their posts. They did so on August 17th, and in the joint letter of resignation stated that they would carry on their ordinary duties of attending to the sick poor during the month, but refused to carry out the duty of examining single men as to physical incapacity for work due to want and privation. The resignations were accepted on August 19th by the guardians, who advertised in the local papers for a whole-time medical man to do the work of the entire union, including the examinations in dispute, and asking candidates to state the salary required, applications to be received by August 26th.

During the interval representations were made to the doctors that the work might be made lighter by appointing all the doctors in practice in the area as temporary medical officers to assist the ordinary medical officers, no doctor examining a man who was his own patient; also that the relieving officer would not send such large numbers of men for examination, but only those about whom they had reasonable doubts. The whole of the doctors readily consented to participate in such an arrangement, and a scheme on these lines was drafted, which in the opinion of the doctors would enable them to examine these men and give certificates without fear or favour, and at the same time let each man feel that he had a fair examination. A letter was sent to the guardians on August 23rd stating that a deputation would wait on the guardians at 3 p.m. at its meeting on August 26th to lay the scheme before them. The deputation attended, but the guardians refused to see them.

No applications having been received for the whole-time medical officership, the guardians decided to advertise again and hold another meeting on September 2nd. In the meantime the guardians asked the medical officers to submit their scheme in writing. This was done by the honorary secretary of the Sunderland Division of the British Medical Association, Dr. R. H. Dix, whose handling of a very difficult and disagreeable situation has been beyond praise. No applications for the whole-time post were received, and the guardians asked the deputation to attend a meeting held on September 6th and discuss the scheme. The deputation (consisting of Dr. Dix, with a representative of the five medical officers, and a representative of the other local practitioners) attended the meeting, and on September 8th

who develops cancer in an organ so liable to injury as the breast is much more likely to dig out from the "subconscious memory" instances of injury than one who is not suffering from cancer.

Of the advantages of early operation for mammary cancer there can be no doubt; it is equally certain that there is a tendency in the human being to postpone action which is unpleasant. Any reasonable proposal for overcoming this prejudice is justifiable; and to this extent another disease campaign is justified. We hope, however, that the female population will steer a middle course between the extremes of daily anxious breast palpation and devil-may-care insouciance. We hope, too, that the leaflets and "talks" of local cancer committees will not be made too lurid. The results of campaigns are rarely commensurate with the time, money, and energy expended on them; but measured and reasoned statements of the case, such as are given in the memorandum of the Ministry of Health, have an educative value which, though gradual, has in the end more permanent effect than mere luridity.

INDUSTRIAL FATIGUE.

WORK OF THE RESEARCH BOARD.

THE sixth annual report[1] of the Industrial Fatigue Research Board to December 31st, 1925, includes an analysis of the published work of the Board since its formation in 1918. For this reason, as well as on account of the interest of the report, it may be well to attempt something more than a mere summary of the purely medical aspects of the work of the Board. The machinery for the work consists of two kinds of committees—one, homogeneous from a scientific point of view, dealing with statistics, physiology of muscular work, and industrial psychology; the other kind heterogeneous, in that the committees are constituted of experts in the appropriate sciences, industrial representatives, and medical or technical experts. The work of the Board is roughly divided into three categories: (*a*) investigations of particular problems of wide industrial importance; (*b*) studies of specific problems submitted by Government departments or industrial associations; (*c*) experimental researches in university and other laboratories.

Definition of Industrial Fatigue.

The report calls attention to criticism which has been directed against the term "industrial fatigue." It is said to be used to cover widely different phenomena, ranging from physiological muscular fatigue to boredom or ennui. It is also stated that the causes underlying fatigue are so varied and complex that any precise definition of the word is at present impossible. The report defends the use of the term if it be accepted quite loosely to include not merely the lessened capacity or inclination which results from previous doing of the same kind of work, but also all conditions affecting the body or mind that impede the normal man from working at his maximum efficiency. It will be seen, therefore, that the scope for its operations set by the Board is very wide, and might be made to comprise the effects of numerous sociological and economic factors. It has limited its functions, however, to conditions concerned with the factory itself, and hitherto has dealt very little with external factors, even when, like housing and transport, they have a direct bearing on efficiency in the factory.

The forty-three reports already issued by the Board, together with some twenty-four other articles or reports mainly by workers for the Board, have been collated and combined into three groups according to whether their principal points relate to the effects on fatigue and efficiency of (*a*) hours of labour, including spells, shifts, and rest pauses; (*b*) conditions of employment, such as ventilation and lighting; (*c*) methods of work, constituting the personal factors in efficiency and fatigue, such as vocational psychology and movement study.

For the estimation of industrial fatigue attempts have been made to employ two kinds of test—direct and indirect. The first consists in the application to the person himself of some previously standardized test. So far the problem of evolving a direct and immediate test has eluded solution, and the Board has had to rely on indirect tests—namely, variations in output and other tests of performance, sickness and mortality, labour turnover (which means the rate of change in the working staff), lost time, and accidents.

[1] 1926. H.M. Stationery Office. 3s. net.

Hours and Output.

Under the heading "hours of labour" the report sets forth the variations in output that occur during the day, during the week, and over longer periods. Thus in the daily work there is often a "saddle-back" curve, an initial rise of output attributable to incitement, and a final drop attributable to fatigue. With mental or light work, however, the curve is often different, showing a fall in output during each spell, owing to monotony, with a final spurt in the afternoon at the approach of the end of work for the day. The weekly curves show that output is nearly always low on Monday and at the end of the week, and that the increased efficiency due to practice, which causes a rise in output, is neutralized by fatigue effects towards the end of the week. It is noted, however, that the distribution of output may be affected by some special incentive such as pay day. In longer periods there is a marked spurt observable in the second week before the annual holidays begin. Output is also affected by the length of shift; a reduction in the length of shift has often been followed by an increase in output per hour, though we gather that the percentage hourly increase with a shorter shift does not always lead to the production of the same total output obtainable with the longer shift. The false economy of hours of work above a certain length demonstrated by the Health of Munition Workers' Committee during the war is perhaps liable to misuse as an argument in times of peace.

A good deal of work has been done for the Board on the subject of "rest pauses," and the observers have satisfied themselves that the introduction of rest pauses brings about an unconscious increase in output. The slowest workers generally benefit most from the system. Improvement in output may also occur with changes of activity, but the results are at present inconclusive, though suggesting that there may be an optimum condition between extreme uniformity and frequent change.

Conditions of Work.

As regards conditions of employment, the Board has made investigations into temperature, humidity, ventilation, and lighting, but has not, so far, dealt with noise, vibration, and dust. In some processes the workers' environment is independent of the conditions of manufacture; in others the environment is unfavourably affected by conditions which are not essential to the process, so that the investigator can freely suggest improvement. But there is a third class of process, such as some forms of weaving, where an unfavourable environment is required for manufacturing processes, and all that can be done is to bring about some degree of physiological improvement.

Observations made by investigators show that in heavy work involving exposure to high temperature the output is greatest in winter and least in summer. The adverse effect of higher temperatures and humidities on working capacity is shown by the longer time unconsciously taken by weavers to deal with stoppage and breakage when temperature and humidity reach a certain level. Ventilation has been closely studied by Dr. Vernon and others; the cooling power of air and air movement being measured by the kata-thermometer. It is physiologically desirable that the head should be at a lower temperature than the feet, and that the temperature gradient between floor and head level should be as slight as possible. This is best achieved by placing the means of heating low or beneath the floor, instead of using steam-pipes above the head. It has been found that artificial lighting causes a fall in output, especially great in textile industries.

Vocational Psychology.

The study of the effect of methods of work brings us to the subject of vocational psychology. At present the initial selection of an occupation is often a matter of chance, and permanent employment is only secured after a process of trial and error. Consequently the "labour turnover"

epidemic form, and resulted in the worst outbreak since 1913, Hindu children appearing to be three times as susceptible to it as Mohammedans. There are now five maternity centres at work, with resident medical women, qualified midwives, and health visitors. Each centre is on the telephone, so that complicated cases can be transferred to hospital at any hour of the day or night. The Buldeodas Maternity Home was opened in the northern end of the town in March, 1924, and contains a maternity ward with twenty-two beds, a series of seven cubicles, and a well equipped room for labour; a septic ward and a septic labour room are also available. From March 1st to the end of the year 417 patients were admitted, 353 cases of labour were dealt with, of which 116 were abnormal; four patients died —two from eclampsia, one from septicaemia after very irregular treatment for five days outside the hospital, and one from heart disease. It is hoped to add an ante-natal and a post-natal clinic to the home. A new ambulance station was opened in Calcutta in July, 1924, and provides accommodation for ten cars, six of these being available for accident and non-infectious, and four for infectious, cases. During the year over 10,000 calls were received, and four new ambulances are to be provided in order to cope with the heavy demand.

England and Wales.

HOSPITAL ACCOMMODATION AT HARROGATE.

H.R.H. PRINCESS MARY VISCOUNTESS LASCELLES visited Harrogate on September 3rd to lay the foundation stone of the new infirmary. The existing infirmary was opened in 1883 by the grandfather of Viscount Lascelles, and in 1906 an extension was opened by Lady Harewood. Only fifty-four beds are at present available, and the senior surgeon to the infirmary, Mr. H. Frankling, called attention to the fact that in Harrogate there was only one hospital bed for every 721 residents. The waiting list was consequently very long. The new infirmary would be built and administered as economically as possible. The necessitous poor would have priority of treatment, but many persons were both willing and able to make some contribution towards their maintenance while in hospital. In the new contributory scheme which had only been in operation for six months there were already 5,000 members paying threepence a week, which represented an annual income of £3,000 in normal years. To this must be added a grant from the employers of 25 per cent. of the workmen's contributions. Provision would be made as soon as possible for patients unable to pay the usual nursing home fees, but desiring to support the infirmary by paying for their own maintenance. Sir Berkeley Moynihan spoke warmly in favour of the establishment of wards and beds for paying patients. The provision of hospitals to-day was only a temporary measure, and very considerable additions would be required in the future.

ROYAL INSTITUTE OF PUBLIC HEALTH.

Under the auspices of the Royal Institute of Public Health a series of lectures on problems of personal public health will be delivered at 37, Russell Square, on Wednesday afternoons at 4 p.m., from October 13th to December 8th inclusive. Sir William Willcox will open the course, and will speak on intestinal infections in relation to personal health and disease. The subjects of the three succeeding lectures are the prevention and treatment of eczematous conditions of the skin of occupational origin, by Dr. W. J. O'Donovan; town planning in relation to health, by Professor L. P. Abercrombie of Liverpool; and ventilation in relation to health, by Dr. H. M. Vernon, investigator for the National Fatigue Research Board. Professor Winifred Cullis will describe the application of industrial psychology to the home, and Dr. Reginald Miller will lecture on the problem of rheumatism and rheumatic heart disease in children. Dr. C. W. Saleeby will give a lecture entitled "From heliotherapy to heliohygiene," and Dr. P. C. Varrier-Jones will give an address on settlements for tuberculous workers. The series will be concluded by Dr. F. E. Fremantle, M.P., who will speak on the role of Parliament in regard to health legislation. The Harben Lectures of the Institute will be delivered on the afternoons of November 15th, 18th, and 22nd by Professor W. W. C. Topley, on the subject of quantitative experiments in the study of infection and resistance. These lectures are open to all interested in medico-sociological problems. It is announced that the annual congress of the Institute in 1927 will be held at Ghent from June 1st to 7th.

Correspondence.

GOITRE IN CHILDHOOD.

SIR,—In your issue of September 11th I noticed correspondence on the above question. I do not think there is any doubt, as Dr. Turton states, that goitre is diminishing, at least the large colloid type of goitre. The whole question, however, of the causation of goitre is a difficult one. The theory put forward by Dr. Turton, that excess of lime has something to do with goitre prevalence, may be correct, and Sir James Berry (BRITISH MEDICAL JOURNAL of December 5th, 1925, p. 1060) has supported this view; on the other hand, there is a large amount of evidence which supports the opinion that alimentary infection either through polluted water or food is one of the causes; both causes might act together, and chalky supplies are very liable to pollution.

One of the places which I gave in my paper[1] as almost free from goitre was Margate, yet here the water comes from chalky strata and has a total hardness of 18, and a permanent hardness of 3.4, with chlorine as chloride 1.6. This water is also bacteriologically clean (see result of analysis by Mr. Hawkins and Dr. A. G. R. Foulerton contained in Dr. McCoombe's report on the health of Margate for 1925).

At Ramsgate Dr. Bannister tells me that enlargement of the thyroid was not observed in any child of 12 years of age during the survey in the schools in 1924, and that enlargement of the thyroid is a rare condition in the borough. He gives me the following extract from the analysis of the Ramsgate water supply: total hardness 33.3 parts, permanent hardness 10.9 parts, chlorine as salt 24.5 parts per 100,000.

At Bath Dr. Blackett states in his annual report for 1925 that the hardness of the water is 21 grains per gallon, and chlorine as chlorides 1 grain per gallon. The percentage of goitre in girls of 12 in the survey was 7.3, and boys of 12, 2.2 (annual report, school medical officer, Bath, 1924).

In my own district, where the water has a hardness of about 3 parts per 100,000, 4.2 per cent. boys of 12 had enlargement of the thyroid, and 17.5 girls of 12. I myself have carried out investigations at Bath and found that goitre was much less prevalent there than in my own district.

I only give the above details to show that any theory of goitre is difficult to prove and the excess of lime theory is no exception. It may be that there is a relationship between thyroid enlargement and calcium metabolism, but why should the chalky water supply in Kent not produce goitre and the chalky water supplies in Derbyshire produce it, or water like Bath with a lot of lime salts cause less goitre than the soft water supply of Glossop?

I entirely agree with Dr. Turton and Dr. Johnson that it is important to find out what happens after school life. I do not go so far as to say details of school life are valueless. I consider them very important, particularly if the children are carefully examined, but I do think they must be read with figures taken from examinations made after leaving school. This is one of the points I made in my paper and during the discussion at Nottingham. It is important also that any investigation after school should be made in co-operation with the school medical officer so as to prevent errors in diagnosis.

I do not think that there can be any doubt that goitre in children is to a certain extent physiological, but it is possible that the physiological enlargement may favour the onset of either endemic goitre or Graves's disease later

[1] BRITISH MEDICAL JOURNAL, August 28th, 1926, p. 373.

the guardians agreed to work the scheme and rescinded the resolution accepting the resignations of the medical officers.

On September 10th medical examination boards were held in four of the five centres of the Houghton union. At Hetton the upper room of the Miners' Hall, where two medical men were examining applicants, was invaded by the assembled mob. The doctors on leaving the hall were followed down the street by 200 or 300 young men, some of whom struck them and threw stones. Both were hit by stones and only got away by motor omnibus after much rough handling. At the Herrington Centre the medical examinations were interrupted by members of the board of guardians, who abused the doctors and made speeches to the crowd outside. At the Houghton Centre there was a jeering and hooting mob, which eventually numbered about 600; police protection had to be sought, and the doctors escaped by making their way through the workhouse and down a side street.

In view of these hostile demonstrations the doctors have, very naturally, refused to go on with the examinations. They are carrying out their ordinary duties as parish medical officers, but no solution of the difficulty has yet been evolved.

India.

MEDICAL AID FOR WOMEN IN INDIA.

FOUR annual reports for 1925 of organizations of which Lady Reading was president until her departure from India have been published in one volume, and give a valuable survey of the work in preventing and treating disease in women in India that is being carried on by women. The four organizations are the National Association for Supplying Medical Aid by Women to the Women of India, which incorporates the Countess of Dufferin's Fund and the Women's Medical Service; the Victoria Memorial Scholarships Fund; the Lady Chelmsford All-India League for Maternity and Child Welfare; and the Lady Reading Women of India Fund, of which this is the final report. Grants from the Countess of Dufferin's Fund have been made to hospitals in the provinces where Women's Medical Service doctors are employed, as these institutions are still very poorly supported locally. In medical colleges and schools 256 students are working, of whom 108 are in the Lady Hardinge Medical College at Delhi. The hospital in connexion with this college provides clinical material in its 200 beds for the instruction of the women medical students in the last three years of their M.B., B.S. course, and it supplies medical aid by women for the women and children of the rapidly growing population of the new capital of Delhi and its surroundings. The students come from fourteen different provinces and States, and in the session 1924-25 thirteen graduated, as compared with eight in the previous year. Dufferin Fund scholarships and stipends are held by twenty-six students in medical colleges at Delhi, Madras, Bombay, and Calcutta, who after graduation are employed when possible as house-surgeons or house-physicians in hospitals staffed by medical women. The Fund aids hospitals for women and children by supplying one or more Women's Medical Service officers to the hospital free of charge, and by giving grants. The hospitals so supplied have during last year treated over 30,000 in-patients, and more than 380,000 out-patients; some 7,000 maternity cases were attended and 24,231 operations were performed. The work of the Victoria Memorial Scholarships Fund has been limited mainly to the training of local native midwives by health visitors, who, on passing out of various health centres, are encouraged to establish classes for midwives as one of their first activities in a new area. The propaganda work formerly undertaken by the Fund is now entrusted to the Lady Chelmsford League, the Fund contributing financially to its support. In addition to travelling health exhibitions, magic lantern lectures on child welfare, flies, tuberculosis, small-pox, and other medical subjects are given in large towns and villages; baby weeks are held, and a considerable amount of training of midwives has been carried on. The Lady Chelmsford League by concentrating on such propaganda and assisting the education of health visitors is benefiting the whole of India. The League assists four schools at Delhi, Madras, Punjab, and Calcutta, the first of these being entirely supported. Lady Reading contributed generously towards the provision of a new Delhi health school, and support has been received from private sources. The new school includes classrooms, a laboratory, a lecture hall and library, ample accommodation for a resident superintendent, and living quarters for twelve students. The infant welfare centre will be a model of its kind, and will serve a crowded area. The Lady Reading Women of India Fund has now been closed, its various objectives having been attained. The nurses' hostel at the Lady Hardinge College is occupied, and the Lady Reading Hospital at Simla, which has been actively at work since 1924, has been endowed financially for the future.

PUBLIC HEALTH IN CALCUTTA.

In his annual report on the public health of Calcutta for 1924 Dr. H. M. Crake reports that the death rate for the town was slightly higher than in the previous year, thus indicating a check in the steady improvement which had been registered year by year since 1919. Only thirty-three cases of plague occurred—less than half the number in 1923. The very mild recrudescence of this disease in Calcutta is held to indicate the possibility of the complete disappearance of plague in the near future, though as recently as 1922 the mortality rose to 144—a reminder that conditions favourable to its spread still exist in the town. Although the cholera mortality rose slightly in the year under review the epidemic was comparatively mild. In Calcutta epidemics tend to recur at intervals of about ten years; in Bengal, as a whole, though there is evidence of cyclical periodicity, there is considerable variation, epidemics occurring in some cases at intervals of three years, in others of six, and in others of ten; similar variations have been observed in Madras. Two encouraging features in the case of Calcutta are the increasing length of time between severe epidemics and the persistence of a low level of cholera mortality, instead of a sharp rise following a decline, as has been the case in previous years. A marked increase in the mortality from malaria and tuberculosis was recorded, the greater prevalence of the former disease being particularly evident in two districts. Mohammedans suffered nearly four times as severely as Hindus, and it is suggested that this may be due to increased susceptibility, particularly in the case of young girls. The tuberculosis death rate rose, particularly in the urban parts of the town, almost the whole of the mortality being due to pulmonary disease; only 125 deaths resulted from other forms of tuberculosis, which may possibly be associated with the rarity of bovine tuberculosis in Bengal. Dr. Crake considers that the absence of the bovine infection accounts in part for the prevalence of a very acute type of disease in man, while the serious spread in Calcutta is attributed to the prevalence of promiscuous spitting. A higher mortality occurs among Indian Christians as compared with Mohammedans and Hindus, and this is especially noticeable in the case of girls over the age of 10, below which there is no evidence of increased susceptibility among females. Dr. Crake blames the retention of the purdah system in the densely populated gullies of the congested town for this heavy mortality among young girls, and also mentions in this connexion the frequency of early marriage, subjecting them to the strain of repeated pregnancies and prolonged periods of lactation. An antituberculosis scheme, including the appointment of a tuberculosis officer with eight assistant medical officers, for systematic house-to-house visiting, a dispensary, and a publicity bureau, has been approved by the Health Committee of the Municipal Council. During 1924 nine ward health associations were established to deal with cases of tuberculosis, malaria, and kala-azar; several dispensaries are open for treatment, and sanitary surveys are made. This work has developed particularly rapidly in the case of kala-azar; the more difficult sanitary and preventive work is progressing less rapidly. No severe epidemic of small-pox occurred in 1924, though in the later months of the year scattered and sporadic cases occurred regularly, and led up to the serious epidemic of 1925. Measles appeared in

With regard to those places more generally accepted as being referred to as "nursing homes" you rightly conclude that the result of the legislation advocated will be to wipe out a large number of them, and you look to the voluntary hospitals to provide the necessary accommodation (as in public life one looks to the Government to end all our woes, so in medical life we seem to look to the voluntary hospitals to solve our problems). If this follows that will mean a further thrust for voluntary hospitals from being charitable places provided for indigent patients to become limited liability companies open to all. If this has to be it is just as well that the public and the medical profession should appreciate whither we are drifting.

But you touch very lightly on what would seem to be a more reprehensible part of the report. The Committee considers that doctors who receive single or two or more patients "are entering into a trade and into competition with others who have to be registered," and therefore should have their houses registered. Recent lunacy inquiries and recommendations are leading the public to appreciate that if individuals are to be kept from crossing permanently the border-line of mental soundness the earliest inducement should be offered to them to go where, alone or with a few others, proper medical supervision and assistance can be secured, whilst a home-like atmosphere is retained. Also, medical students are required now to have had some training in dealing effectively with such patients. Some hundreds of doctors now—and they could become thousands in the future—do receive one or more such patients, as well as those permanently unstable, into their family life. The result is most satisfactory to all concerned.

What will be the effect of legislation on these facilities, knowing what we do of registration, inspection, regulations, reports, and so on in other fields of public health? Will these doctors and their wives be content to submit their homes and home life to the inquisitorial control of a cold-blooded machine? If not, for such patients you suggest there will be hospital accommodation—that is, institutional treatment at an asylum, or State or voluntary hospital. And yet it is just that that these patients and their relatives loathe and will not submit to unless driven by poverty, as they seem certain that such will make them into chronics; also it is often quite unsuitable. Well then; what is to be done about it?—I am, etc.,

Hove, Sept. 20th. E. ROWLAND FOTHERGILL.

MAN AS THE INTERMEDIATE HOST OF THE TAENIA SOLIUM.

SIR,—Your correspondent Mr. E. J. H. Roth, in his article on the above subject (September 11th, p. 470), says: "It has not been found possible to discover a record of appearances which may be seen in radiograms when man becomes the intermediate host."

May I point out that such appearances in different patients have been described and illustrated with radiographs by the following authors: Sich (1905), Pichler (1911), Fischer (1912), Geipel (1913), Pursche, Köhler, Saupe, Stieda, and Brailsford.

A list of references are given in the paper, "The *X*-ray Diagnosis of Animal Parasites (Helminthes) in Man," which was delivered by me to the Electro-Therapeutic Section of the Royal Society of Medicine on January 19th, 1926, and can be found in the printed *Transactions* of the Royal Society of Medicine.—I am, etc.,

JAMES F. BRAILSFORD.

Edgbaston, Birmingham, Sept. 14th.

CANCER MORTALITY AND AGE RATES.

SIR,—In your issue of August 28th (p. 387) there is an article by Dr. John Brown entitled "Comments and practical suggestions on Circular 426 (Cancer)."

In this article Dr. Brown compares the death rates from cancer between mining districts and residential and seaside towns, and suggests that the lower death rate amongst miners and their wives is due to "their active and strenuous life and their plain but efficient dietary." Might I point out that the discrepancy in the death rates is in reality occasioned by the variation in the age rates in the two classes selected for comparison?

In mining and intensive industrial centres the proportion of persons over 40 is considerably less than in residential centres. In the two centres specifically mentioned by Dr. Brown—namely, Rhondda and Wigan, the proportion of persons over 40 is 249 and 270 per 10,000 of population respectively. In Hastings and Bath it is 415 and 399 per 10,000 of population respectively (census 1921).

At the period of highest cancer mortality (55-75) this discrepancy is still more marked. At the age period over 60 Rhondda has an exceptionally low proportion of persons, whilst Hastings has a correspondingly high proportion. A comparison between other intensive industrial centres such as St. Helens, Warrington, and Middlesbrough, and residential centres such as Bournemouth, Oxford, and Cambridge, shows similar results.

I should be interested to ascertain if Dr. Brown has further evidence, outside statistical, to support his view. Is there any confirmation of the statement, frequently made, that cancer is more prevalent amongst the well-to-do than the poor?—I am, etc.,

London, S.W.16, Sept. 16th. E. HUDSON.

SUBACUTE APPENDICITIS.

SIR,—The letter in the JOURNAL of September 11th (p. 506) under the above heading from Sir John O'Conor raises several interesting points.

The increasing frequency of definite localized pain met with in the gastric and duodenal areas due to a cause quite remote from these regions—namely, a subacute appendix—has become crystallized into one of the most common difficulties and pitfalls which beset the general practitioner. The absence of any lesion where bismuth meals and *x* rays have been invoked, especially if coupled with undue retention of the test meal in the stomach, often confuses rather than clarifies the diagnosis.

On one point I differ from Sir John O'Conor, which, however, may be attributable to a more limited experience than his. Instead of finding increased pain and tenderness over McBurney's point I have generally found the opposite—namely, that discomfort, tenderness, and pain (even with fairly deep palpation) are present in an inverse ratio to that complained of in the regions referred to above. Needless to say, this greatly increases the difficulty of correct diagnosis.

For some time I have been on the look-out for a satisfactory explanation as to whether parallelism of structure, position, with undue or irregular innervation can in any way be responsible for the interference which takes place between a chronic appendix and the pylorus with the gastric symptoms which follow.—I am, etc.,

Arnside, Westmorland, Sept. 13th. D. M. MACDONALD.

THE MEDICAL PROFESSION AND LIFE INSURANCE COMPANIES.

SIR,—Is it not time to review the relations existing between the medical profession and life insurance companies?

A little while ago a patient of mine wished to take out a deferred policy on the life of his son, aged 9 years, with a certain London company. The company wrote to me, as his medical attendant, asking me to fill up a form containing a lot of questions bearing upon the family history of the proposer and his father, the answers to which were only known to me in my professional capacity. I took the form to my patient and with his permission answered the questions. One of the answers disclosed the fact of insanity in the family, and I now get a further letter from the company asking for information on this point.

Now this seems all wrong. If the company for its own interests requires this information it should address its queries to the proposer, or his father, if, as in this case, it is a child. In fairness to the company I must add that they paid me a fee of a guinea, but from one point of view this makes it worse, as they are paying the medical man to give away confidential information.

in life. In conclusion I must say—and I think Dr. Turton and Dr. Johnson will agree—that the whole question is one for further inquiry.—I am, etc.,

E. H. M. MILLIGAN, M.D., D.P.H.

Glossop, Sept. 18th.

SANATORIUM TREATMENT.

SIR,—Your review on sanatorium treatment appearing in the BRITISH MEDICAL JOURNAL of August 28th (p. 397) is somewhat disconcerting to one who has been treating pulmonary tuberculosis at a sanatorium provided to deal with a population of 300,000 persons for the past eighteen years. We find here that all kinds of cases, almost without exception, do better at the sanatorium than when treated at home; home treatment may be considered as dispensary treatment without the fatigue of attending the dispensary. This must be true unless dispensaries use a method of treatment unknown in sanatoriums. The explanation of these contradictions would seem to lie either in something being wrong in the treatment given at the sanatoriums concerned or in some unknown factor working for the good of the patients at the dispensary.

It is possible that the sanatoriums do not carry out the correct treatment, which has been known at least since 1870, when Niemeyer of Tübingen published his *Lectures on Pulmonary Consumption* (the New Sydenham Society, 1870). It has been practised for many years at sanatoriums which have not become infected with the heresy of "graduated labour," but have followed the method of "graduated rest," as explained by myself in the *Lancet* of April 3rd, 1909. The former method probably came into vogue owing to the too successful filtering of cases at dispensaries and elsewhere, with the result that none but chronic or acute advanced cases find their way into sanatoriums, the time for whose successful treatment was missed, because dispensary or home treatment was thought sufficient. The cases suitable for a sanatorium should be recent and exhibiting symptoms of activity.

In order that success may follow, it is necessary that the following conditions be complied with: (1) intimate medical supervision; (2) rectal temperatures must be taken four times a day; (3) the patients must be kept in bed until their temperatures conform to normal, being at least as low as 36.6° C. before rising in the morning—I cannot enter further into this matter here; (4) provision should be made for separate rooms where necessary.

Dying patients should not be sent to sanatoriums as their presence is a detrimental psychological factor.

Three methods of treatment have recently come into vogue which emphasize the importance of rest: (1) artificial pneumothorax, (2) thoracoplasty, and (3) phrenectomy. These operations, which are hazardous and uncertain in their effects, are efforts to prevent movement of the affected lung, and become necessary because efficient sanatorium treatment with rest was not given earlier.

The diagnosis of tuberculosis should be made by a study of the history of the patient and a careful inquiry into symptoms, and not by the presence of physical signs and the finding of tubercle bacilli in the sputum. It is somewhat wearisome to be told that our results will, of course, be excellent if we treat cases where tubercle bacilli are not found; that has always been our contention. A case treated early soon becomes well and therefore difficult to diagnose; this, of course, is an advantage, the patient being then in the position of the remainder of his fellow citizens—that is, he is a person who has been infected but has no symptoms. It is perhaps unfortunate that we cannot as a rule both cure our patients and at the same time verify the diagnosis by finding tubercle bacilli; nor can we make sure by having an autopsy.

If only patients exhibiting symptoms be treated we make sure that we are only treating those who need it, and are not wasting time treating quiescent patients, who (as always) will continue for long periods to carry on their occupations without any treatment other than a few days in bed occasionally.—I am, etc.,

EDWARD E. PREST.

Ayrshire Sanatorium, New Cumnock, Sept. 15th.

SIR,—There must be many of those interested in tuberculosis who have been waiting, like myself, to see what criticisms would be called forth by your review of the article on "The influence of sanatorium and dispensary treatment and housing conditions on pulmonary tuberculosis," recently published in the *Annals of Eugenics*. Nor have our expectations been disappointed. In the issue of the BRITISH MEDICAL JOURNAL for September 11th appeared a letter from Dr. F. R. Walters, and in that for September 18th appears a more damning indictment by Dr. J. R. Gillespie, both of these being medical men who have specialized in tuberculosis.

Most of your readers must have felt inclined at once to question the scientific value of Dr. Stocks's and M. Noel Karn's statistics when they read that patients who remained only fourteen days in a sanatorium were defined as "sanatorium treated." Dr. F. R. Walters, in his criticism, says "it is exceptional in this country to allot more than from three to five months to sanatorium treatment." I should have thought that in the present day it is generally admitted that anything less than a period of some six months is unlikely to have any material influence on the course of pulmonary tuberculosis. Speaking for Cheshire, I can say that a period of three to five months only is the exception rather than the rule. But in any case, to classify patients who have had only two weeks in a sanatorium as "sanatorium treated" is simply ridiculous.

Dr. Gillespie points out further fallacies, one of the most important (in his own view the most important) being the failure to differentiate "sputum-positive" from "sputum-negative" cases. Your editorial review states that "the memoir is based on an exhaustive study of the first 2,794 consecutive cases of undoubted pulmonary tuberculosis brought under the survey of the Belfast Tuberculosis Dispensaries." The most important step in the establishment of the diagnosis of pulmonary tuberculosis as "undoubted" is surely the demonstration of tubercle bacilli in the sputum. What value, then, can we give to the assertion that all these cases were cases of "undoubted tuberculosis" when the investigators themselves admit that "it was found impracticable to use the presence or absence of tubercle bacilli in the sputum as more than an adjuvant in diagnosis, *since the number of cases in which bacilli were sought for and found was relatively small*" (italics mine), the percentages being given as 19 for males and 11.9 for females.

I think it is quite possible that the value of sanatorium treatment has been overestimated, and that we should preserve an open mind on the question. But it will require more carefully collated evidence than that published in *Annals of Eugenics* to prove that sanatorium treatment "is associated to a significant degree with inferior progress" of the patient afterwards, and that bad housing conditions, "as judged by . . . class of house, state of cleanliness . . . , or overcrowding" have no influence on the patient's ultimate progress.—I am, etc.,

E. WEATHERHEAD,

September 19th. Tuberculosis Officer, Cheshire, North-East District.

REGISTRATION OF NURSING HOMES.

SIR,—Your leader in the BRITISH MEDICAL JOURNAL for September 18th (p. 532) on the report of the Select Committee of the House of Commons draws attention to certain recommendations in that report, and visualizes the consequences if legislation is carried through to give them effect. But you fail to enlarge on two important aspects.

When talking or writing about "nursing homes" it is desirable to state exactly what is meant, as otherwise the popular idea that one is referring solely to places where a large number of patients can be received for medical, surgical, or maternity treatment holds the field. The Select Committee accepted as a definition:

"Any premises used, or intended to be used, for the reception of persons suffering from any sickness, injury, or bodily or mental infirmity for the purpose of providing such persons with nursing, where any payment or reward is made, or promised by, or on behalf of any person so received."

and desires even this definition to be amplified, as in its opinion it does not include premises for the reception of women in childbirth.

KING'S HONORARY PHYSICIAN.

HIS MAJESTY has approved the appointment of Lieutenant-General Sir Matthew H. G. Fell, K.C.B., C.M.G., Director-General, Army Medical Services, to be Honorary Physician to the King, with effect from June 3rd, 1926, in the place of the late Lieutenant-General Sir William Lieshman, K.C.B., K.C.M.G., F.R.S.

EXCHANGE OF NAVAL MEDICAL OFFICERS.

ADMIRALTY Fleet Order No. 2607 states that a surgeon-commander R.N., is required for service as senior medical officer, Flinders Naval Depot, in exchange for a surgeon-commander, Royal Australian Navy. The depot hospital includes a theatre where all major surgical operations are undertaken, and the officer will be required to be an operating surgeon. The appointment will carry assisted passages for wife and children, and the Australian authorities state that information as to the prospects of obtaining a house can be communicated later. Early application should be made for this appointment through the usual Service channels. The position of officers lent for service in the R.A.N. is in all respects equivalent to that of officers who serve continuously in the Royal Navy, with whom they will be considered equally for promotion and appointment.

Medical News.

DR. ANDREW BALFOUR, Director of the London School of Hygiene and Tropical Medicine, will attend the fiftieth anniversary celebration of Johns Hopkins University, Baltimore, next month, and deliver an address at the formal opening of the new building of the School of Hygiene and Public Health of that university.

THE opening function of the winter session at the Middlesex Hospital Medical School will take place at the Queen's Hall, Langham Place, on Friday, October 1st, at 3 p.m. Professor T. Yeates will deliver the introductory address, after which the Archbishop of Canterbury will distribute the prizes. The annual dinner of past and present students of the school will be held the same evening, at 7.30, at the Savoy Hotel, with Mr. Victor Bonney in the chair.

THE annual prize distribution at St. George's Hospital Medical School will be held on October 1st, at 3 p.m., in the board room of the hospital, when the inaugural address, entitled "Doctors and the public," will be delivered by Dr. E. Graham Little, M.P. The annual dinner will be held at the Hyde Park Hotel at 7.45 on the same day, with the Right Hon. C. C. Craig, M.P., in the chair.

AT the opening of the winter session of the London (Royal Free Hospital) School of Medicine for Women, Hunter Street, W.C., on Friday, October 1st, at 3.30 p.m., the introductory address will be given by Sir Walter Fletcher, K.B.E., M.D., F.R.S., Secretary of the Medical Research Council.

AT the opening of the eighty-fifth session of the School of Pharmacy of the Pharmaceutical Society of Great Britain on Wednesday, October 6th, at 3 p.m., the inaugural sessional address will be delivered by Dr. James F. Tocher, of the University of Aberdeen.

AN autumn course of lectures at the Hospital for Sick Children, Great Ormond Street, W.C.1, will commence on Thursday, October 7th, at 4 p.m., when Dr. Cockayne will deal with "Rickets as it is seen to-day."

A NEW course of post-graduate study at the National Hospital, Queen Square, Bloomsbury, will be held from October 4th to November 26th. It will consist of out-patient clinics, clinical lectures and demonstrations, lectures on the anatomy and physiology of the nervous system, demonstrations on the pathology of nervous system, and clinical demonstrations on methods of examination. The fee for the course, including the pathology demonstrations, is £5 5s., and for those holding perpetual tickets £3 3s.

A COURSE of post-graduate lectures will be given at Ancoats Hospital, Manchester, on Thursdays at 4.15 p.m., beginning on September 30th, when Mr. Harry Platt commences a series of six lectures on the treatment of common injuries. Three lectures on tonsillectomy will be given by Mr. F. Holt Diggle on November 11th, 18th, and 25th. There is no fee for the course, and all medical graduates are cordially invited. Tea will be served at 3.45 p.m.

A COURSE of twelve lectures will be given on Sunday afternoons, commencing October 3rd, at 3.30, at The Guildhouse, Eccleston Square, S.W.1, on the contribution of science to human life. Sir Richard Gregory (editor of *Nature*) will speak on the worth of science at the first meeting, and Dr. Bernard Hollander on the sound and unsound mind at the second. Sir George Newman will lecture on the contribution of medical science to human life, on December 5th. Further information may be obtained from the honorary secretary to the Guildhouse Advisory Board, 2, Rosslyn Mansions, Goldhurst Terrace, N.W.6.

DR. JOHN RUDD LEESON, J.P., senior consulting physician to St. John's Hospital, Twickenham, is the Charter Mayor of the newly incorporated Borough of Twickenham, and as such attended the celebrations on September 22nd.

AT the meeting of the Society for the Study of Inebriety, to be held in the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, on Tuesday, October 12th, at 4 p.m., Dr. J. D. Rolleston will read a paper on alcoholism in classical antiquity.

THE Biochemical Society has arranged the following provisional programme of meetings for the session 1926–27: Saturday, October 9th, Cambridge; Monday, November 8th, St. Thomas's Hospital, S.E.1; Monday, December 6th, Imperial College, S.W.7; Monday, February 7th, 1927, Lister Institute, S.W.1; Friday, March 18th, University College, W.C.1.

A COURSE of practical demonstrations on deep *x*-ray therapy in the treatment of tumours at the Beaujon Hospital, Paris, will begin on October 5th, and continue on following Tuesdays; while on Friday mornings from October 8th another course on electrical diagnosis and treatment will be given at Dr. Aubourg's laboratory. Further information may be obtained from Dr. Aubourg at the Beaujon Hospital. The demonstrations (which will be delivered in English, if desired) are free to practitioners and students.

THE People's League of Health will be represented at the conference convened by the International Union against Tuberculosis, to be held in Washington, U.S.A., from September 30th to October 3rd, by the following members of its medical council: Sir Robert Philip, Sir John Lynn-Thomas, Professor S. Lyle Cummins, and Dr. Edward Hope.

POPULAR talks on travel, science, and invention will be given in October and November, with experimental demonstrations or lantern slide illustrations, in aid of King Edward's Hospital Fund for London. The series, which commences with "Seeing by wireless," by Mr. H. L. Baird, at the Royal Institute of British Architects, on October 7th, at 5 p.m., will include talks on subjects as diverse as aviation, artificial production of the human voice, liquid air, the Sahara, and refrigeration. Tickets, price 2s. 6d. and 5s., or serial tickets 12s. 6d., may be obtained from the Secretary, King Edward's Hospital Fund for London, 7, Walbrook, E.C.4, or at the doors.

THE Council of Epsom College is about to award one of the Leopold Salomons Entrance Scholarships of £50 a year which were established "as a slight recognition of the splendid work of the medical profession carried on during the war." Candidates must be sons of legally qualified members of the medical profession and be unable to enter Epsom College without the help of this scholarship. They must have reached 11 years of age and be under 14 on January 1st last, and show a standard of education adequate for their age. Forms of application and full particulars will be supplied by the Secretary of the College, 49, Bedford Square, W.C.1, where applications must be sent not later than the morning of October 6th. The Council will also shortly award a special St. Anne's Home scholarship of £52 a year, tenable for about five years, to the orphan daughter of a medical man who was in independent practice in England or Wales for not less than five years. Only those are eligible as candidates who were fully 10 years of age and not over 12 years of age on May 1st last. Forms of application can be obtained from the Secretary.

THE first all-Russian ophthalmological congress will be held at Moscow from September 27th to 30th.

THE first German congress for combating tobacco smoking by young persons was held at Düsseldorf from August 7th to 9th, when papers were read on physical exercise and smoking, and smoking among the youth of the working classes. The use of tobacco by children in Holland has recently grown to an alarming extent. A recent investigation has shown that smoking is practised by 30 per cent. of boys aged 6, by 50 per cent. of boys between 9 and 10, and by 88 per cent. of those over 11 years of age.

A CHAIR for the history of medicine has recently been founded at the University of Louvain, with Dr. Tricot-Royer, president of the International Society of the History of Medicine, as its first occupant.

DR. MAURICE FAURE, President of the Société Médicale du Littoral Mediterranéen, informs us that his society has organized a visit of doctors from different countries to the French Riviera for the purpose of acquainting them with the therapeutic resources of that region. The journey will take place between December 15th and 24th, and will include visits to Hyères, St. Raphael, Cannes, Grasse, Venice, Nice, Beaulieu, Mentone, Monte Carlo, and Monaco. The programme and full particulars can be obtained from the Office Français du Tourisme, 56, Haymarket, London, S.W.1.

This brings me to another point—namely, the usual fee paid for examination. The fee remains the same as it was thirty years ago, though its purchasing power is much less, and, more important, the examination and report required are much fuller and more elaborate than they used to be.—I am, etc.,

Oporto, Sept. 11th. W. A. MURRAY.

APPENDICITIS AND VEGETARIANISM.

SIR,—I was greatly interested in Mr. Hamilton Bailey's letter in the JOURNAL of September 18th (p. 545) as it is also my own conviction that diet has a close relationship to the incidence of appendicitis.

For a considerable period during the war I was responsible for the health of a large Arab population in Mesopotamia, and met with not a single case of appendicitis. The staple diet of these tribes was rice, dates, and other fruit. At the same time, among a much smaller British population in the same district, whose diet included tinned and frozen meat, numerous cases of appendicitis occurred.—I am, etc.,

R. J. MCNEILL LOVE, M.S.Lond., F.R.C.S.Eng.

London, W.1, Sept. 18th.

SIR,—I was much interested in Mr. Bailey's letter. A similar case occurred in my practice about three years ago. In this case the boy was about 15 years of age, and had been brought up on strict vegetarian principles. The appendicitis was acute and the operation only just in time to prevent perforation.—I am, etc.,

JOSEPH A. PARKES, M.B., Ch.B.

Bristol, Sept. 21st.

Obituary.

Dr. JAMES CYRIL DALMAHOY ALLAN, who died in Hong-Kong on September 8th from infective endocarditis, received his medical education at Edinburgh, where he graduated M.B., Ch.B. in 1905, obtained the diploma of tropical medicine in 1907, and proceeded M.D. in 1911 with distinction. After graduation he acted as house-physician under the late Dr. G. A. Gibson in the wards of the Infirmary, and subsequently obtained the appointment of senior house-surgeon to Mr. Hogarth Pringle at the Royal Infirmary, Glasgow. In 1908 he became medical officer to Christmas Island, where he remained for two years, when he removed to Hong-Kong. A colleague writes: "On looking back at the old days in the university, one remembers an outstanding figure that strode smiling and cheerful through his classes and seemed to absorb facts and pacify examiners without apparent effort. His quick and ready mind went straight to the essentials, and many a slower-brained colleague was grateful for some point of difficulty cleared up by a short succinct explanation or demonstration. He had a host of interests besides the mere routine of class work. The Royal Medical and the Dialectic Societies were channels for the outflow of his superabundant energies, and under his stimulating guidance the English Public Schools Club took on a new lease of life. As a house-physician he ranked high, and he took to Christmas Island a knowledge of his profession that that small islet will probably never see equalled. A remarkable spontaneous demonstration of regret signalized his departure from the island, all the inhabitants, to the humblest Chinese coolie, uniting to do him honour. The value of his work was recognized in high places, as evidenced by his return to the island, for a brief period after the war, as governor. Allan arrived in Hong-Kong speaking Cantonese as easily as he did English. His practice among Europeans and Chinese rapidly increased, and he achieved notable success as a surgeon. With his strong sense of humour, his undeviating honesty, and a certain streak of fatalism that ran through his character, he found much about the Chinese to appeal to him. His interest in the country was profound, and he made several pilgrimages to the remote interior. On one occasion, in company with his faithful Chinese friend and body-servant, he walked over a thousand miles overland. During the tour he spoke no word of English and adopted the native costume. During the war he was at first attached to a battalion in France, and later was transferred to the staff. For gallantry in the field he was awarded the Croix de Guerre by the French Government. It was hoped by many that he would elect to stay in this country, but his tastes and family traditions pointed the way eastwards, and the glamour of the Orient held him in its spell. He leaves us with a golden memory of a vivid, arresting personality: one who was a born healer of the sufferings and sorrows of mankind. His generous heart had a genius for friendship, and his many friends adored him, rejoicing in the charm of his infinite variety. Breezy, hearty, joyous, a jest was never far from his lips, a kindly greeting ever in his eyes."

The Services.

INDIAN MEDICAL SERVICE.

STUDY LEAVE RULES.

WE have received from the Director-General, Indian Medical Service, a copy of revised study leave rules for the I.M.S., Army Instruction, India, B 206 of July 27th, 1926, published as Army Notification No. 890 in the *Gazette of India* of July 10th.

1. Study leave may be granted on the recommendation of the D.G.I.M.S., by the Government of India, or by local governments who may delegate their powers to the High Commissioner for India.

2. The amount of such leave which may be granted is one-twelfth of an officer's service qualifying for leave, up to a maximum of twelve months during an officer's service.

3. This leave may be taken at any time, but an officer who, after taking study leave, retires, on any ground except ill health, within three years of the date of his return to India, will be liable to forfeit all benefits which he has received in respect of that study leave, and to refund any additional pay or allowances received for such leave.

4. The minimum period of study is two months.

5. The minimum period of leave granted solely as study leave is six months.

6. Study leave can be combined with any other leave, provided that the period of study is not less than two months.

7. Except as provided in Rule 8, an officer should submit his application for study leave through the prescribed channels, stating the course or courses of study he proposes to undergo, the institution where he proposes to study, the dates of beginning and ending of the course, and the examination he proposes to undergo.

8. Officers on leave who wish to convert part of their leave into study leave must apply to the Secretary to the High Commissioner for India. If they wish to take an extension of leave for purposes of study they must submit with their application evidence of having obtained the approval of the authorities in India to their application for extension and to the course of proposed study.

9. An officer may undertake a course of study during leave on average pay, and draw study allowance therefor, provided that study allowance is not drawn for a total period of more than twelve months during his whole service.

10. Study allowance is at present fixed at twelve shillings a day in the United Kingdom, £1 on the Continent of Europe, and £1 10s. in the United States. No allowance can be drawn until the officer has submitted the certificates required by Rule 12. The allowance is not admissible to an officer who retires at the expiration of his leave without returning to India, and may be retrenched, under Rule 3, if he retires within three years of his return. A period of vacation, not exceeding fourteen days, between two courses of study, may be counted as study leave. No course of study will be recognized as study leave for allowance or any other purpose unless the course of study has been approved in accordance with Rules 7 and 8.

11. The rate of pay admissible during study leave is half average pay, subject to the prescribed minima and maxima.

12. On completion of a course of study leave a certificate in the proper form, together with any certificates of special study, must be submitted to the High Commissioner for India.

13. Study leave will count as service for promotion and pension, but not for further leave. It will not be counted in calculating the aggregate amount of leave which an officer may take during his service.

The above rules apply also to officers in temporary civil employ, and in military employ, with a few variations, as follows:

2. The period of study leave allowable is one-twelfth of pensionable service.

6. The total period of all combined leave granted, in the first instance, will not exceed one year.

7. Such officers should apply to the Under Secretary of State, Military Department, India Office, instead of to the High Commissioner.

11. The rate of pay admissible during study leave is the rate of pay admissible under military leave rules.

As the above notes are considerably condensed from Instruction No. 206, all officers who propose taking study leave should carefully study the original Instruction.